Asian Development Bank	(CDCL)	Kingdom of Bhutan

Phuentsholing Township Development Project

Project Number: 50165-002

Loan Number: 3668-BHU(COL)

Grant Number : 0573-BHU(SF)

Contract N°:PTDP-PIC-1

Quarterly Project Report N° 4

Period from 1 July 2019 to 30 September 2019

[PIC Report Cataloguing N° PTDP– 039 – 17 October 2019]

egis | Gyaltshen Consultancy

Document Quality Information

General information

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Project's Name	Phuentsholing Township Development Project (PTDP) PIC Report Cataloguing N° PTDP - 039
Document Name	Project Quarterly Report N° 04
Date	26 October 2019
Reference	Version N° 01

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History of modifications

Version	Date	Written by	Approved/Reviewed by

Abbreviations

ADB	: Asian Development Bank
ADF	: Asian Development Fund
ALDTP	: Amochhu Land Development and Township Project
APFS	: Audited Project Financial Statement
BMBMS	: Biodiversity Monitoring and Bench Marking Study
CDCL	: Construction Development Corporation Ltd.
CEMP	: Contractor-Environmental Management Plan
CW	: Civil Works
CV	: Contract Variation
DHI	: Druk Holdings and Investment Ltd.
DMF	: Design Monitoring Framework
EA	: Executing Agency
EIA	: Environmental Impact Assessment
EMP	: Environmental Management Plan
FIDIC	: Fédération des Ingénieurs Conseils
GAP	: Gender Action Plan
GFC	: Good For Construction
GRC	: Grievance Redress Committee
GRM	: Grievance Redress Mechanism
HSE	: Health Safety and Environment
IA	: Implementing Agency
ICB	: International Competitive Bidding
LTP	: Letter to Proceed
MoF	: Ministry of Finance
MOM	: Management, Operation and Maintenance
MoWHS	: Ministry of Works and Human Settlements
NCB	: National Competitive Bidding
NCR	: Non-Conformance Report
NEC	: National Environment Commission
Nu	: Ngultrum
PT	: Phuentsholing Thromde (city council)
PAC	: Project Advisory Committee
PCR	: Phuentsholing – Chamkuna - Road
PIC	: Project Implementation Consultant
PIU	: Project Implementation Unit
PMU	: Project Management Unit
PS	: Provisional sum
PTDP	: Phuentsholing Township Development Project
PPTA	: Project Preparatory Technical Assistance
QAP	: Quality Assurance Plan
RENEW	: Respect Educate Nurture Empower Women
RGoB	: Royal Government of Bhutan
RFI	: Request For Inspection
RFQ	: Request For Quotation
SEMR	: Semi-annual Environmental Monitoring Report
TN	: Technical Note
ToR	: Terms of Reference
VO	: Variation Order

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Appendixes

List of tables

Basic Project Information

Name of the project	Phuentsholing Township Development Project
Cost of project	63.00 $million
Name of Agency	Druk Holding and Investments Limited
Implementing Agency	Construction Development Corporation Ltd
Approval Date	5th June 2018
Project effectiveness	26th July 2018
CDCL PMU created	26th July 2018
Project Completion Date	30th June 2025
Project Closing Date	31st December 2025
Project Location	Bhutan / Phuentsholing
PTDP anticipated impact	Impact 1: Balanced and sustainable development of human settlements ensured; Impact 2: Smart growth principles applied in planning and development.
PTDP anticipated outcome	Phuentsholing's urban area protected from floods and expanded with improved amenities and services
PTDP Outputs	Output 1: Flood and erosion protection measures installed Output 2: Municipal infrastructure constructed Output 3: Township management systems installed
Date of the Loan agreement	03rd July 2018
Loan effectiveness	01st October 2018
Elapsed loan period	364 days
Last ADB review missions	7th to 10th May 2019, 25-30th September 2019 (ADB, PPTA)
Reporting Period	1st July to 30th September 2019

Project funding source	Amount ($million)	Share of Total (%)
Asian Development Bank[a]	53.00	84.1
Ordinary capital resources (concessional loan)	28.74	45.6
Special Funds resources (ADF grant)	24.26	38.5
Government	10.00	15.9
Total	**63.00**	**100.0**

[a] Disaster Risk Reduction Fund will finance $6.07 million equivalent of the concessional OCR loan and $6.07 million of the ADF Grant.

Source: Asian Development Bank.

A. Executive Summary

A.1 Major issues

Major issues pending at end of period (30 September 2019), for:

PIU/PMU

- To confirm works sanctioning for milestones (problems in Taking Over of part of works, several Defect Liability Periods and responsibility of maintenance post construction);

- To resolve issues on the removal of materials from Amochhu riverbed following estimate of present dredging needs (volume will be decided after finalizing the embankment levels) for Zone A. A decision to include the river channelization works in CW01 Contract, or not;

- To deal with the process of recurrent maintenance of Amochhu channel levelling and its financing to be clarified. The estimation volume of sediment material for the purpose of recurrent maintenance of Amochhu channel can be calculated in more detail after 2D Hydraulic Modelling result is obtained and final decision of river bed level and embankment top level is endorsed by CDCL and ADB ;

- To confirm and finalize the project boundary between PTDP Project and PCR Project with coordinates data. The main impact is foreseen on the Outfalls limit towards the boundary. The unclear boundary works may cause Outfalls works to be re-designed for some outfalls;

- To decide the price item for earth filling and embankment works, since Contractor does not execute levelling of the river bed and disposing of surplus material as per mentioned in BoQ. Contractor to give the breakdown of rate analysisas per the ADB's rate analysis breakdown format;

- To decide the change of embankment level through accurate topographic & bathymetric survey and 2D Hydraulic Modelling. The current level of the ground profile is found higher than the 2015 data (design stage) by around 1.6 m – 2.3 m. This has made the need for embankment level raise inevitable;

- To provide enough works front to contractor to avoid any delay and claim from the contractor as much as possible due to the change of embankment level.

- Raising the embankment level will impact the design of Outfalls work. This will lead to procastination of Oufalls work. Due to issue of utilities openings at Outfalls structures, redesigning of Outfalls structure is required;

- To finalize on CW-02 procurement plans and principles (ad measurement contracts, packaging in several lots, etc.).

PIC

- To adapt the Construction Supervision Team to match the Contractor's activities progress, particularly for night shift supervision; Logistic is in accordance with increasing of staffs;

- To engage the new team leader as soon as posible;

- Refund of advance payment is leadingto negative invoices. This should be discussed with CDCL/ADB

- To conduct 2D Hydraulic Modelling. as per the proposed model on which approval from ADB is awaited.
- To carry out BMBMS study. As per ADB's approval PIC to invite Request for Quotations (RFQs) from relevant agencies to conduct BMBMS study

- To conduct FMC study. PIC recommends to start the study after 2D Hydraulic Modelling has been completed and the results endorsed by ADB. The workplan of FMC study was submitted to ADB for endorsement.

CW-01 (Contractor)

- To manage transit traffic along with PCR's contractor since public temporary road is inside PTDP area and used by public vehiclesCW-01 plans to slowly move the public road towards the project boundary. In the month September 2019, there were more than 2500 vehicles, out of which 50% are heavy vehicles that transit per day. Meanwhile PTDP contractor's vehicle is less than only 250 vehicles per day.

- To maintain the access road periodically along with PCR's contractor.

- To provide a new rate with the rate analysis for earth filling work payment without levelling the riverbed and disposing of surplus material.

A.2 Progress made during the reporting period

Table A.2-1: Project progress during the period

Activity	% Accomplished vs. Target for the period[a]		Summary of Progress
	Accum.	Planned	
Flood and erosion protection measures	20.6%	31.1%	D-Wall: 1944 m length; Partial Cast In Situ Wall (2.3 m height): 30 m length; General Earth Filling: 530,114 cum
Municipal infrastructure	0.0%	0.0%	
Township management systems	0.0%	0.0%	

[a] Accomplishment and target refers to the financial forecast

Progress of activities against output indicators are listed in **Appendix 1**, Design and Monitoring Framework. The updated implementation schedule showing actual progress to the one anticipated in shown in **Appendix 2**. A progress photographs album is attached in **Appendix 12.**

A.3 Problems encountered

Below are the proposed remedies / actions taken for the pending issues encountered during the start of the project:

1. Sediment management

As per the analysis of the PIC Sediment Management Expert / Hydrologist, the volume of sediment excavation required to establish a uniform bed level across the 300 m wide design channel is around *5.7 million cum,* but due to the change of embankment level, the new approximation volume shall be confirmed based on the result from 2D Hydraulic Modelling . Moreover, the volume of annual sediment deposition that should be expected within the design channel after its construction is *at least one million*

cum. More than double that amount is possible during a large flood event with the potential to completely infill the design channel.

Failure to remove the large volumes of sediment deposited in the design channel each year (or rapid accumulation in a single monsoon season before removal can occur) could lead to serious consequences, including flood inundation of the embankment level, rapid erosion of the embankment, and back-watering and sedimentation within the tributary outfall channels.

2. Removal of existing deposited materials

For earthworks related pay-items in the CW-01 bill of quantities, Contractor has to conduct excavation within the 300m channel corridor. However, Contractor produced his method statement for earthworks related items where the production of backfilling is entrusted to a sub-contractor, of which materials (coming from riverbed) stockpiles are already available. Therefore, no additional materials will be removed, and moreoverit is foreseeable that the present condition as per CW-01 Contract will not resolve the requirements for channelization of the river as per geometry mentioned in the design.

An alternative solution has to be found, to remove the volume of deposits already available along the 300m river channel along ZoneA to bring the river bed to the designed level

3. Recurrent sedimentation

Several options would have to be studied to address the recurrent sedimentation, some of which are proposed as follows:

- Systematic removal of sediment materials, which means to organize and finance it;
- Construction of additional protection infrastructure, where necessary;
- Re-assessment of river training measures, considering the actual site condition (riverbed roughness value) and change in Project implementation concept (postponing the right bank development).

However, prior to undertaking the above activities, sedimentat volume needs to be confirmed first. For that matter, a comprehensive *topographic and bathymetric survey* will be conducted along Zone-B and Zone-A area with 300 m width channel to be dredged. *2D hydraulic modelling* will then be run; Monitoring of sediment deposition in areas of gravel removal is also required to more thoroughly evaluate the pros & cons, and feasibility of the various options discussed in the PIC technical report (Sediment Management).

4. Design Modifications

Due to some datum level issue, modifcations in the embankment level is required for PTDP. The proposed modifications are to raise the embankment level with some distant (≥ 1 m height) that will be finalized after the topo survey is done and 2D reqults finalized. The change will affect the diaphragm wall elevations, lower and upper walkway elevations, finished fill levels and cross drainage works. This will warrent, a civil and structural redesign, especially for outfalls. In addition, some of the works already constructed might require remedial works including design, e.g. the top of the constructed diaphragm walls may need to be raised with additional cast in-situ concrete wall to achieve the revised design levels.

Further, the raised embankment level of PTDP will also impact PCR project and LAP, since PCR vertical alignment is pegged on to the PTDP project finished levels.As an intial indication, PCR is informed that the level raise will be around +1.5m.

5. PIC staffing and mobility

As expressed in the PIC's Inception Report, Construction Supervision Team has been found *understaffed* to fulfil basic tasks of control and supervision of an ad-measurement civil works contract. A first variation

order (CV-01) to PIC Contract, issued on 4th March, 2019 improved PIC capability with inclusion of Environmentalist and Quantity Surveyor (both national and non-key experts) in the PIC Construction Supervision team. Besides, the Employer also seconded PIC with supervision technical staff including two site inspectors, one laboratory technician, one land surveyor and his assistant.

However, as the Contractor's work pace increased significantly and activities are conducted on multiple sites, particularly for Diaphragm Wall works, where the contractor do night shifts as well. additional resources are required for proper quality control and monitoring.

To take care of this, the Contract Variation-02 (CV-02) to PIC Contract, was signed on 26th July 2019, where the following additional non-key national personnel staff were included

- 2 Site Inspectors;
- 1 laboratory technician;
- 1 Land surveyor (seconded by CDCL);
- 1 Land surveyor assistant (seconded by CDCL);
- 1 Site Inspector (seconded by CDCL, when required)

PIC mobilized 1 Site Inspector on 29th July 2019 and 1 Laboratory Technician on 15th August 2019. CDCL seconded 1 additional Land Surveyor on 29th July 2019 and 1 survey assistant on 11th September 2019.

Unfortunately, one Site Inspector (seconded by CDCL) was relieved by CDCL from PTDP on 17th August 2019, and currently only 2 Site Inspectors (SI) are available to work for full sift of D-wall construction. This was discussed with PIU andthe site inspectors . PIU have agreed that the seconded SI from CDCL, who was removed, will be replaced as soon as possible, and the 2nd SI from PIC will be mobilized when all work fronts are made available to the contractor.

Two vehicles are available on site for PIC mobilization. It has been agreed in CV-02 to procure 2 motorcycles for Site Inspectors for within project mobility. Hence, PIC procured one motorbike on 18th September 2019. The other one will be procured when the new Site Inspector gets mobilized.

6. CW-01 Civil Works Contract

6.1 Contract design drawings

Design drawings stipulated as Good for Construction in CW-01 contract, were nevertheless not approved by Engineer's Representative. The site conditions reported in the Contract Documents differed from those surveyed at the start of works, where some parts of the design had to be adjusted.

These adjustments are linked to all 12 out-falls, which are necessary to be connected properly with adjacent and upstream structures of Phuentsholing–Chamkuna Road project (PCR),..

Accordingly, an extensive review of detailed design is conducted by PIC. But since it cannot be done at once for all components, it is conducted in accordance with Contractor's progressive needs, which shall be as per their baseline schedule. However, the issue is the Contractor does not follow its initial baseline schedule, and frequently proposes to change their work location where works are easier to progress.

As a result, redesigning on a case by case basis requires some flexibility for PIC Experts which are not easy to manage. The expertise concerned is mostly for structures and geotechnical engineering. Furthermore, the Contractor has to produce shop drawings, for which design & dedicated drafting team is required in their team.

As per PIU/PMU, once the decision on the new embankment level is endorsed by ADB and CDCL, the structural redesign of all outfall structures (based on inlet-outlet level changes) shall be commenced by CDCL's consultant engineer (HCP).

6.2 Site safety

Temporary Flood Protection (TFP) measures to protect works and installations during the monsoon period were completed at the end of July 2019 and contractor rectified the main structure of TFP in the beginning of September 2019. The outcome of protection works are measured from the effective flood protection against flooding along theAmochhu and flash floods from adjacent tributary along the eastern boundary (all outfalls). The temporary flood control measures were able to avoid any risk of flooding to the project site.

Details and cost for temporary protection measures were analyzed and agreed with CW-01 as these works are included under the Provisional Sum. For protection against the tributaries flash floods, it was mainly the Contractor's responsibility to assume site safety, and the cost will be borne by the Contractor.

6.3 Works sectioning and milestones for Delay Damage application

Particular conditions of Contract introduces 5 sections of works, a Time for Completion and a rate for application of Delay Damages on each sections Usually, when linear works are concerned, sections are clearly defined as once works are completed taking over certificate for part of works are issuedand immediately the Defect Liability Period for that section starts. The Employer is then responsible for any damages occurred due to external activities.

However, in the case of CW-01 no sections have been geographically determined and work to be accomplished are just related to quantities of some items. In these conditions, issuance of taking over certificate of part of works would be difficult to apply as it will discharge Contractor for further responsibility..

This would mean that if a section of diaphragm wall is taken over by Employer, then later on, when the contractor has to construct cast in situ walls or any other structure linked to the D-wall section, Employer has to hand over the site to the Contractor again. This situation does not seem actually practicable.

In view of the above, the Engineer's Representative will not be taking over for part of works and hence there will be no ground for Delay Damages notice as per the milestones.

Therefore, it is suggested that:

- Either works sectioning be clearly defined with linear works functional section; or
- works sectioning, with intermediate milestones be removed as unpractical.

6.4 Pay Item for payment of backfilling works

Contractor has been warned, on 8th March 2019, that works carried out by Sub-contractor for backfilling cannot cover underpay items described in the General Earth Filling section of CW-01 Contract. Every

item description includes "excavation in river bed, levelling the river bed as per the levels provided in the drawings" works, which will not be executed by Sub-contractor.

Therefore, the Contractor has been requested:

- to confirm that works will be performed as per item description in Bill No-02c for General Earth Filling of Bill of Quantities; or

- Submit a proposal of Variation to Contract, as per GCC 13.2, "Value Engineering" justifying and introducing a new unit rate, which can only be less than item Contract rates (in particular rate of item n°401).

The contractor did not respond to the Engineer's letter, however they still submitts a statement using the same Item 401.

As the Engineer has the option to reject the statement, or determine a provisional rate, until an appropriate rate is agreed by both parties, Engineer applied a provisional rate for the payment of backfilling works.

7. Works front for Contractor

Due to the change / raise of embankment top level, 2D Hydraulic Modelling will be conducted to analyze the scenarios. This may take around 3 months or more to complete including Topographic & Bathymetric Survey and get endorsement from CDCL / ADB.

The structural design review of some main structures, like protection wall structure and particularly for outfall structures need to be carried out by CDCL's consultant designer, HCPDPM afterwards, to ensure that the previous designs could be used or re-designed. It will take some time for CDCL's consultant designer to complete the review design and perhaps some another months to complete the redesign (of outfalls structures).

Therefore, it is important to provide contractor with some works fronts, whilst waiting for the embankment level decision and design review period, in order to avoid substantial project delay and contractor's claim for the time extension and additional costs.

As per the discussion between PIC and PIU/PMU , some of work fronts activities have been provided by PIC to Contractor as follows:

- +1m of General Earth Filling work from the previous design level;
- Production of Precast Grass Paver Blocks;
- Raising of Termination level of Diaphragm Wall by +1 m from peg 301;
- Partial Cast in Situ Wall in anchor slab area.

The Partial Cast in Situ Wall work cannot be undertaken at present since the final top level of Cast in Situ Wall is not finalized due to construction joints

However, the other works front, like Partial Cast in Situ Wall work in anchor bar area and Diaphragm Wall work in Omchhu river are being taken up for consideration by PIU and PIC.

A.4 Proposed program of activities / work plan for the next quarter

From PIU/PMU side

- Prepare a framework for CW-02 bidding documents;
- Coordinate with PCR regarding information exchange and project updates.
- Carry out Stakeholder Consultation meeting
- Submit SEMR to ADB for public disclosure
- Engagement of Independent Environmental Monitoring Expert for reviewing SEMR and preparing the Environmental Compliance Report for onward submission to ADB.

From PIC

- Conduct Topographic and Bathymetric Survey and 2D Hydraulic Modelling;
- Propose and Initiate procurement process for Biodiversity Monitoring and Bench Marking Study (BMBMS);
- Mobilize Flood Management consultancy, 2D Modeling, and enhance Construction Supervision team, and miscellaneous logistics issues;
- Continue supervision of Civil Works Contract N°01 and management of Contract under FIDIC General Condition of Contract;
- Prepare and conduct an overseas training session for PIU & PMU;
- Assist PIU/PMU to finalize canvass for preparation of CW-02 bidding documents.
- Preare SEMR for further submission to PIU

From Contractor CW-01

- Continue implementation of C-EMP;
- Carry out HIV/AIDS and health disease awareness campaign at project
- Carry out 2nd Aquatic study at Amochhu
- Continue Diaphragm Wall construction, and connect D-wall to Zone A termination point at North end (Rock outcrop);
- Continue General Earth Filling works;
- Continue Cast in Situ Wall construction;
- Continue Precast Grass Paver Blocks production.
- Continue actions to manage traffics (public vehicles, PCR vehicles and PTDP vehicles)d inside PTDP area, or to divert it out of site works

B. Project activities

B.1 Project Organization Management

General

The proposed PDTP will reclaim 464 hectares (ha) of riparian land near Phuentsholing Thromde (Municipality) located along both sides of the Amochhu River on Bhutan's south-western border with India. The project will provide protection from floods and erosion and will address the scarcity of land for housing, ease the pressure on human settlements in the project area by providing ample water supply, improving access, solid waste management, etc.

Organization

Within the ADB Project agreements, the Executing Agency (EA) of the project is Druk Holding and Investments Limited (DHI), a government-owned enterprise. The Implementing Agency (IA) is Construction Development Corporation Limited (CDCL), a subsidiary of DHI specializing in urban and infrastructure development, who has established a Project Management Unit (PMU) at Thimphu and a Project implementation unit (PIU) in Phuentsholing for the sole purpose of implementing the Project.

The PIU is headed by a Project Manager and is well staffed. The PIC reports to the Project Manager and supports PIU. The Project management organization chart is displayed here-after.

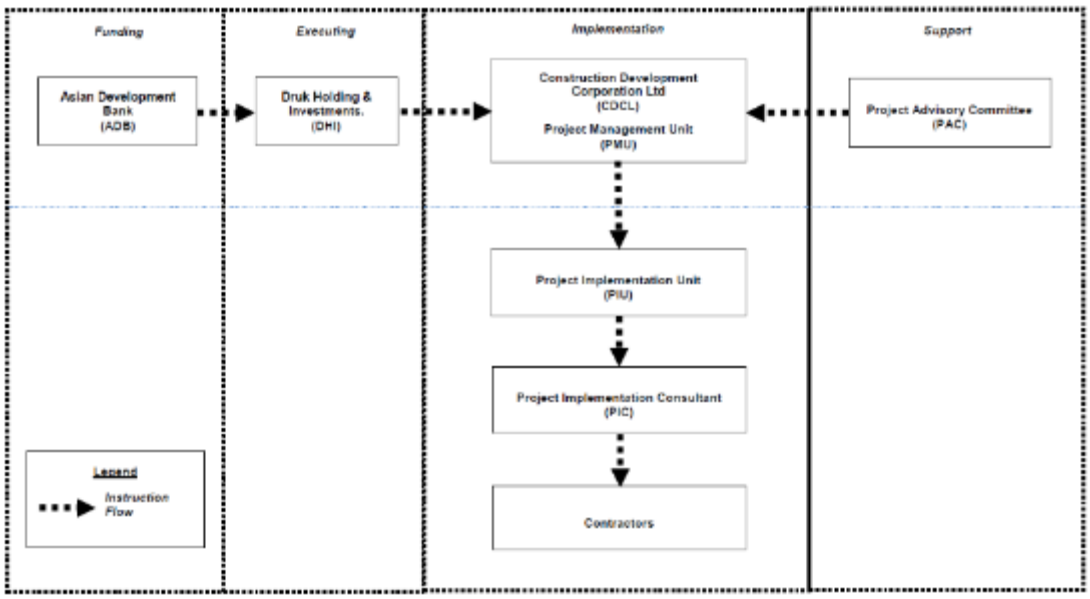


Figure 1: PDTP (Phase 1) Implementation Arrangements

The PMU and PIU positions staffed related to Project management, but not the one related to construction supervision activities, which are under PIC responsibility, are listed in **Appendix 3.**

B.2 Consultant Activities:

B.2.1 Signed Consultancy Contracts data / Ongoing Procurement

Only one Consultancy services contract has been signed with M/s. Egis International - Egis India Joint Venture, in association with M/s. Gyaltshen Consultancy for Project Implementation Consultant services on 18 July 2018. Services started on 28 October 2018.
Procurement of Independent Environmental Monitoring Expert, including negotiations, has been conducted by PIU/PMU and the contract signed on April 4, 2019.

B.2.2 Status of Variation Orders

PIC contract Variations:

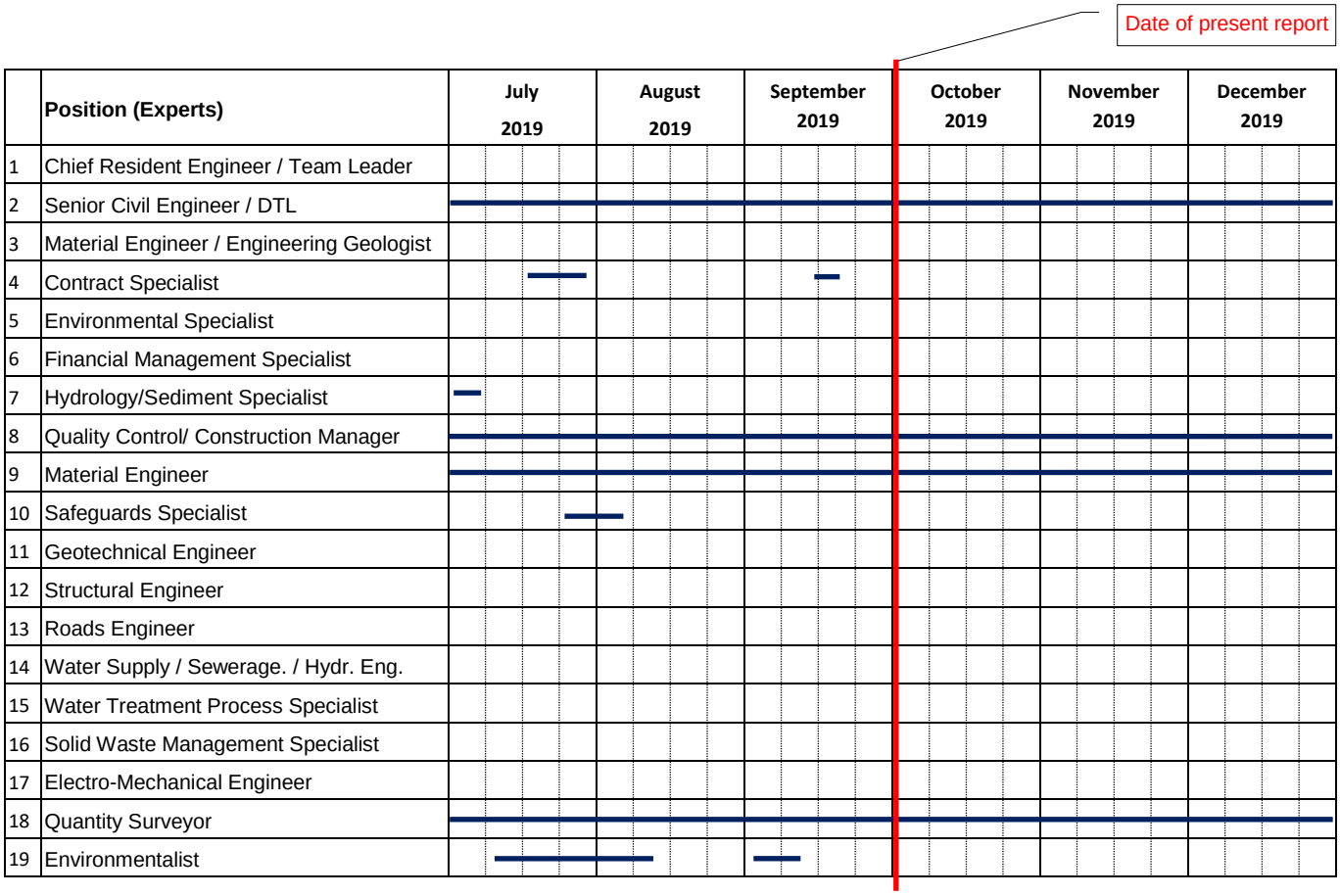
A second Variation Order (CV-02) was signed on 26th July 2019. The CV-02 includes:

- Additional Construction Supervision PIC technical staffing (Site Inspectors, Laboratory Technician and Land Surveyor)
- Reshuffling of Contract Items in order to include (under provisional sum) Biodiversity Monitoring and Bench Marking Study (BMBS) and (Flood Management consultancy including a Flood Early Warning System (FEWS) and Flood Management Plan (FMP), Topgraphic and Bathymetric survey for 2D Modelling.
- 2D Modelling.
- Maintenance of current project vehicles.
- Improvement of PIC mobility including procurement of motorcycles.
- The Contract amount would remain unchanged, but Contingencies would decrease by a certain amount.

B.2.3 PIC Organization and Personnel Activities

Consultant Staffing

Table B.2-1 PIC staffing bar schedule (reporting quarter and next quarter)



PIC Logistic

Table B.2-2: PIC logistics

Transportation	PIC purchased one Motorbike on 18th September 2019.

Construction Supervision Team Activities

- Mobilization from 28 October, Organization of Supervision activities, sharing of tasks among personnel, preparation of Quality Assurance plan and starting to and tasks assignment among CS personnel.
- Review of design: Design review for CW-01 works done but needed updated surveys. Engineer considered that detailed as per Contract documents cannot be considered as "Good for Construction" drawings. Thus shop-drawings have to be prepared after updated site survey being implemented.
- Outfall invert levels between PCR design and HCP design at the Project boundary do not match. Slopes of Outfalls need to be changed to follow PCR invert level at project boundary. PIC prepared revised sketches and slope tables. Due to embankment level issue, there is a possibility that Outfalls works need to be redesigned by CDCL's consultant designer after endorsement of 2D Hydraulic Modelling result by ADB.
- Project boundary between PTDP and PCR Project need to be finalized and mutually agreed, especially in Outfalls area.
- Monitoring and Supervision of Diaphragm Wall work, Partial Cast in Situ Wall work, General Earth Filling work, Production of Precast Grass Paver blocks.
- Certification of CW-01 IPC n°10 (June 2019 works), IPC n°11 (July 2019 works and material advance), IPC n°12 (August 2019 works and material advance).

Core Team activities

1. **Mobilization of Specialists**

Table B.2-3: Mobilization of Speicialist

Particulars	Date	Purpose
Hydrology / Sedimentation Specialist	24/06/19 - 04/07/19	- Response to ADB's comments on PIC Technical Note No. 10; - Implications for a +1 m Rise in the PTDP Embankment Level and recommendation; - Update on Temporary Flood Protection Measures
Safeguard and Communication Specialist	18/07/19 – 03/08/19	
Contract Specialist	18/07/19 – 31/07/19	
	16/09/19 – 20/09/19	
National Hydraulic Engineer	12/08/19 – 14/08/19	
	15/08/19 – 17/08/19	

2. PIC Reports

Table B.2-4: PIC Reports

SN	Reports	Date
1	Quarterly Project Report No.3 (Revision 1) (April –June 2019)	27th July 2019
2	Semi Annual Report S1 (January – June 2019)	30th July 2019
3	Inception Report for "Topography and Bathymetry Survey" and "2D Hydraulic Modelling"	20th August 2019
4	PIC's initial review & recommendations of package – 2 (CW-02) Contract for Bid Document Preparation	10th September 2019
5	Tentative Work Plan and Schedule of Flood Management Consultancy at PTDP	16th September 2019
6	Project Monthly Report (M10) August 2019	19th September 2019
7	Document Format for Topographic & Bathymetric Survey as part of 2D Hydraulic Modelling	26th September 2019
8	Biweekly Progress Report (1st September – 15th September 2019)	28th September 2019

3. Ministry Site Visit

- Ministry of Economic Affairs Visit on 10th July 2019
- His Excellency, The Prime Minister visited on 8th September 2019

4. Official Site Visit

- DHI Personnel Site Visit on 30th September 2019
- Director of Department of Forest visit on 14th September 2019

5. Monthly Coordination Meeting (PIU, PIC & CW01)

- Monthly Coordination Meeting – 3 (PIU, PIC & CW01) on 23rd August 2019

6. PTDP & PCR Coordination Meeting

- 3rd PCR & PTDP Coordination Meeting on 09th July 2019

7. Special Meetings/ Discussions

- 2D Modelling Meeting with National Hydraulic Engineer on 12th August 2019
- Construction Seminar on 29th August 2019 – 30th August 2019 at Royal University of Bhutan (RUB)
- Special Discussion with PCR & PTDP on 13th September 2019

8. Health Safety & Environment

Table B.2-5: Activities under Health Safety and Environment

SN	Activities	Date
1	CDCL Health & Safety Training / Site Visit by CW-O1	17th and 18th July 2019
2	Meeting between Health Safety & Environment Team with Independent Environmental Monitoring Expert (PIU PIC CW01)	20th July 2019
3	Meeting on Improving Safeguard Policy Applications in South Asia Developing Member Countries	22nd July 2019
4	1st Mass Cleaning Campaign at Site to observe "Zero Waste Hour"	3rd August 2019
5	Information Session on Dengue by PIU/PIC environment officials to CW-01 especially residing outside PTDP site	7th- 8th August 2019
6	Earthquake Mock Drill	20th August 2019
7	2nd Mass Cleaning Campaign at Site to observe "Zero Waste Hour"	7th September 2019

9. Factory Visits

- Third Factory Visit (Perfect Steel TMT) on 09th August 2019

10. Production of Technical Note

- (TN n°13) Implications for a +1 m Rise in the PTDP Embankment Level
- (TN n°14) Update on Temporary Flood Protection Measures

11. ADB Mission Visit / Meetings

- Video Conference with ADB on 24th July 2019
- Project Preparatory Technical Assistance visit on 25th September 2019 – 30th September 2019

12. Site Activities

- Cast in Situ Wall consecration on 26th September 2019
- Engineer's Day celebration on 15th September 2019

Use of Provisional Sum

Table B.2-6: Status of use of PIC Contract Provisional Sum

Item	Status	Amount (USD)
Studies, Surveys and Reports	a) Biodiversity Monitoring and Benchmarking Survey. TOR prepared by PIC and submitted to ADB has been approved by ADB. PIC to prepare for the procurement by shopping method as per ADB guidelines. PIC is waiting for draft procurement document prepared by PIU as per ADB guidelines. b) Flood Management Consultancy. TOR had been approved in contract variation No.02 (CV-02).	230 000
Topographic and Bathymetric Surveys for 2D Modeling	TOR prepared by PIC and had been approved in contract variation No.02 (CV-02).The services are procured under PIC through the use of provisional sum.	35 000
2D Modeling Software License Rental for 2 months	The provisional sum for 2D modeling is only for Software License Rental for 2 months, USD 1,750. PIC is waiting for ADB endorsement for the inception report in prior to start the work. The Survey will be started after ADB endorsement at the earliest.	1 750

2D Modeling

- As per ADB's requirement, PIU has requested PIC to develop 2D modeling. The 2D modeling shall be started after completion of Topographic and Bathymetric Surveys at the earliest.
- The PIC has prepared TOR and had been approved in contract variation No.02 (CV-02). The overall cost is USD 94,652.50 and BTN 840,000 i.e. approximately USD 106,626.84.

B.3 Implementation of physical works

B.3.1 Signed Civil Works Contracts data / Ongoing Procurement

Only one CW contract signed - CW-01 with AFCONS for river training works on 18 July 2018. Site handed over on 27 September 2018. Notice to start works on 1st November 2018.

B.3.2 Status of variation orders

No new Variation Order initiated for CW-01

B.3.3 Civil Works package summary of financial progress

Table B.3-1: CW-01 Summary of financial progress

Contract	Contract Date	Start date	Time for completion (days)	Completion date	Financial progress (%)		Elapsed time (days)
					Target	Actual	
CW-01	18 July 2018	01 Nov. 2018	912	01 May 2021	20.6	31.1	439

Advance Payment (2 instalments paid) and Material Advance (3 instalments paid)

B.3.4 CW-01 Contractor's establishment

N°	Description	Status
1	Project Management	At the end of the period, 39 expatriat staffs, 11 national staffs and 23 Sub-Contractor national staffs. Totally 73 Management Staff available up to this month.
2	Manpower	At the end of the period, there was 419 manpower available. Contractor: 59 National Manpower and 167 Expatriate Manpower. Sub-Contractors: 92 National Manpower and 101 Expatriate Manpower.
3	Plant and Equipment	All key equipment as per required by Contract Document – General Specifications, Section-7 had been mobilized to the project site.
5	Quarry / Crusher	No Quarry / Crusher is provided by Contractor. *Source of coarse aggregates and fine aggregates are from Quarry / Crusher supplier located within the vicinity of the project site*.
6	Pre-casting Yard	Pre-casting yard for precast grass paver blocks, including curing ponds and stock yard.
7	Filling Material	No Quarry will be provided by Contractor *Source of filling material is from Quarry / Crusher supplier located at project vicinity*

B.3.5 CW-01 Works Progress

General Requirements

N°	Description	Status
1	Site Possession	Handover of Hindrance Free Area for the project on 27 September 2018. Area handover for Site Installation 01 November 2018
2	Obstructions	Traffics from public / private vehicles moves inside project site at some locations.
3	Utilities [electrical poles etc]	Frequent failures of electrical power supply at site offices. Tap water supply for site offices is not continuous during the day work. *Contractor to provide suitable generator set to supply electricity temporarily during blackout time.* *Contractor to ensure the continuous supply of tap water supply by providing a proper pump.*
4	Health &Safety	No NCR / CAR issued. No major accidents reported but 2 minor incidents were reported during the period.
5	Maintenance of Site Road	PTDP Contractor and PCR Contractor conducts dust control by a periodic sprinkling of water on and periodically maintenance the temporary road.
6	Environment	No NCR / CAR issued. No environmental accidents reported.
7	GRM	No grievances related to Contractors activities registered during the last 3

		months.
8	Design	The contractor is required to review all the latest revision working drawing (good for construction) and submit a discrepancy list (if any). There is no discrepancy, querries submitted by Contractor. The location change of D-Wall termination (at the north end) had been approved by the Employer. Outfalls design may be changed due to datum issues and erroneous contour and may need to follow PCR design at project boundary. Due to change of embankment top level, there will be some of modifications of on going works need to be done, like Cast in Situ Wall works and Outfall works. *Contractor to submit the shop drawings for the detail locations, arrangement of structural joints, shuttering, finishing works, etc. refer to the typical detail drawings from Good for Construction Drawings including all the work modifications, especially for outfall works.*

Quality Control Activities

N°	Description	Status
1	Contractor Quality Control Plan	Quality Control Plan has been submitted to PIC by contractor. Quality Control Plan is very broadly and refers to an internal set of procedures from Contractors, submitted on case by case basis. PIC checks when required and sometimes may request for improvement, depending on its requirement. PIC, in particular, requires the Contractor to revise QCP as follows: *Method Statement for all work activities with shop drawings shall be submitted and approved prior to the commencement of work.* *Test shall be conducted for all materials to be used for construction as per the technical specifications and as per the instruction of the engineer's representative.* *Testing frequency shall be as per the technical specification and standard* *QCP shall be submitted for all work activities.*
2	Material Source Approval & mix designs	Materials source have been approved: - *Not Available.*
3	Materials Testing	Cement Testing: Cement cube compressive strength test, Normal consistency, Initial & Final Setting Time, Fineness Test. Concrete cube compressive strength test (7day and 28 day) Aggregate for concrete: Gradation test, flakiness, elongation index, impact value of coarse aggregate. Earth filling material: Atteberg Limits, MDD & OMC.
4	Inspection	PIC Mobilized one site inspector from 1st July 2019 . One Laboratory technician was procured by PIC at 15 August 2019. Refer to current condition upto this month. Totally, at least 3 site Inspectors are required to inspect site works. Day time: D-wall work ,Removal of contaminated concrete , Guide Wall, Precast Production (2 Site Inspectors, 1 Surveyor) Earth Filling work (1 Surveyor, 1 Lab Technician) Testing for all kind of material (1 Lab technician) Night time: D-wall work (1 Site Inspector).
5	Non-Conformance	No Non-Conformance Registered (NCR) / Corrective Action Report (CAR) was issued during this period.

Works Status

N°	Description	Status
1	General Items	Operation and maintenance of all CW01's and PIU/PIC site facilities including supply of power, internet, collection and disposal of wastewater and solid waste, provision of security, cleaning and maintenance / repair work is under CW01. Operation and maintenance of the Material Testing and Environment Monitoring Laboratory including maintenance / repair work in accordance with the Specification is under CW01. Provision of facilities and implementation of all measures required under the Health & Safety Plan (under CEMP) is under CW01. Provision of all work progress reports in coloured photos (8"x10") and video diary of construction works as per specifications. Monthly submission of hard copy of the report (A4 size) 2 copies, along with soft copies of photos and videos of construction works is under CW01.
2a	River Training Works	Guide Wall work: 2742 m cumulative length completed (58%) at Part-2, 5 & 6 (July, August and September 2019)
		Diaphragm Wall: 1944 m cumulative length completed (41%) at Part – 3, 4, 5 & 6 (July, August and September 2019)
2b	Embankment Works	Open Outfall N° 8 (69m length). Construction started on 22 Dec. 2018, *however, stopped because PCR public road on part of outfall layout still not diverted.*
		Open Outfall N° 02 (188m length). Construction started on 15 Jan. 2019 *Works on-going. Contractor temporarily halted the works due to a high water table.*
		Open Outfall N°03 (169m length). Construction started on 04 Feb 2019 *Works ongoing. Contractor temporarily halted the works due to a high water table.* Temporarily, Outfall works were postponed due to vertical datum issue. It is confirmed that the embankment level shall be rised more than 1 m height.The fix height of embankment level depends on the result of 2D Hydraulic Modelling endorsed by ADB and decided by PIU.
2c	General Earth Filling	Started on 18 Feb. 2019. Earthworks are executed by Sub-Contractor, M/s Rigsar Construction Company Pvt. Ltd. *At the end of this period, 530.114,25 cum was completed .(16.9 %) of a total of 3,140,000 cum*
2d	Promenade Finishing	Precast Paver Block production in Precast Yard was started in the beginning of August 2019. Due to embankment level issue, PIU instructed PIC to give work front for CW01. After Some trial of Precast samples, PIC allowed CW01 to start the production.
2e	Irrigation & Landscape	Not yet started
3	Provisional Sum	Provisional sum for Temporary Flood Protection . PIC as per approval by PIU, instructed CW01 to start Temporary Flood Protection work at 10 April 2019. CW01 supposed to finish the work at the end of May 2019. Due to the difficulty to procure large boulders, PIC instructed CW01 to cast concrete block as a replacement of large boulder. CW01 stated in their official letter that temporary Flood Protection had been completed at 31st july 2019. As per PIC inspection and comments , CW01 to rectify Temporary Flood Protection works. Joint inspection between PIC & CW01 had been conducted to finailize the work completion.

4	Day works	No day works ordered

Table B.3-2: CW-01 - Physical progress per major works items

Major works items	Unit	Contract quantity	Target 30/09/2019	Achieved 30/09/2019
Diaphragm wall	M	4,509	1755	1,944
Cast in situ wall	M^3	6,000	2105	329
Retaining wall	M^3	8,600	0	0
Ducted and open outfalls	M	2,562	0	3 structures started
Embankment construction	M^3	3,140,000	480,221	530,114
Lower Level walkway	M^2	4,600	0	0
Upper Level walkway	M^2	23,800	0	0

B.4 Field Monitoring visits, workshops, training and particular meetings

The list of field monitoring visits, workshops, training and particular meetings is presented in **Appendix 4**

B.5 Status of Contract Awards

Table B.5-1: Status of Contract award

Contract	Bid preparation.	Bid period	Bid evaluation	Award &Negotiation	LTP
Civil works packages					
CW-01 River Training	Q1 2017	Q1& Q2 2017	Q2 2017	Q2 2018	12 Sep. 2018
CW-02 Common urban infrastructure	Q3 2019				
CW-03 Flood early warning system	Q3 2019				
CW-04 Power transmission infrastructure					
CW-05 ICT infrastructure					
Consultancy services packages					
CS-01 PIC	Q1 2017	Q2 & Q3 2017	Q3 2017	Q3 2017	17 Sep. 2018
CS-02 Environment monitoring expert.	Q4 2018	Q1 2019	Q1 2019	Q2 2019	
CS xx 2D hydraulic model					
CS-03 Urban Management Advisor					
CS-04 Investment Promotion Advisor					
CS-05 Sustainable Township management capacity development consultants					
CS-06 Investor promotion and transaction advisory consultants					

Appendix 6 shows the Updated Procurement plan and Contract Award schedule. There is no change compared to the initial PAM Procurement Plan.

B.6 Disbursement of Project Funds

The total and breakdown of investment costs remain unchanged (see **Appendix 7**), per awarded Contract the invoiced amounts are as follows (extract from **Appendix 7**).

Table B.6-1: Financial Status of PTDP Civil Works, Goods & Consultancy Contracts

Investment costs	Contracts Amount (Taxes included)		Certified until this month* (May 2019)		Certified this Month*(June 2019)		Certified this Month*(July 2019)		Certified this Month*(August 2019)		Total Certified incl. this month*	
	Cur;	Amount	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%
Civil Works Contracts (CW-01)	BTN	2,934,669,207	420,261,556	14.5	49,406,689	1.7	74,723,787	2.5	99,571,657	3.4	643,963,689	22.2
Consultancy	USD	4,138,144	401,121.26	9.7	25,760.00	0.6	41,524.00	1.0	18,440.00	0.4	486,845	11.8

Services (CS-01 PIC)	BTN	91,474,227	9,770,933.33	10.7	1,697,167	1.9	2,540,100	2.8	2,144,333	2.3	16,152,533	17.7

* Amount of works and services billed in the table above excludes taxes. The data are from invoice of June, July and August 2019

Summary of disbursements for the reporting period showing actual payments against each contract is indicated in the table below.

Table B.6-2: Status of Disbursement of Project Fund (till report date)

Cat	Description/ Name	Budget Allocation (mil. US$)	Contracts Awarded (mil. US$)	Uncontracted Balance (mil. US$)	Total Disbursed (mil. US$)	Undisbursed Amount (mil. US$)
		(a)	(b)	(c) = (a - b)	(d)	(e) = (a -d)
Loan	Civil Works	15.05	15.05	0	0	15.05
	Consulting services *(PIC)*	7.42	5.27	2.08	0.788	6.632
	Independent Environment Expert		0.077			
	Others	6.28		6.28		6.28
	Total	**28.75**	**20.397**	**8.36**	**0.788**	**27.962**
Grant	Civil Works (CW-01)	19.57	19.57	**0**	10.85	8.72
	Others	4.69	**4.32**	0.37		
	Total	**24.26**	**23.89**	**0.37**	**10.85**	**8.72**
DHI	PMU and PIU Expenditures	1.67	N/A		0.22	1.45
	Training	0.21	0	0.21	0.04	0.17
	Operation and Maintenance (O&M)	0.86	0	0.86	0.54	0.32
	Others	7.26	3.07	4.19		7.26
	Subtotal	**10.00**	**3.07**	**6.93**	**0.83**	**9.17**

*1US$ = 70.5 BTN
*O&M includes the TDS and Equity portion of payment

Appendix 8 displays the S-curves and quarterly details for Loan 3668-BHU and Grant 0573-BHU contracts awards and disbursements.

B.7 Details of Counterpart Contribution

Within the report date, DHI has disbursed an amount of Nu. 58.1 Million (US$ 0.82 mil.) as equity fund to CDCL from which the counterpart disbursements are made. During this report period, the counterpart fund was exhausted (0.83m), hence additional fund is soughed from DHI.

B.8 Implementation Schedule

Appendix 2 display updated Implementation schedule for Outputs (actual vs. scheduled).

C. Environmental aspects

C.1 Environmental Monitoring Review

A Summary of Environmental Monitoring Review from July to September 2019 is attached in **Appendix 9.**

In addition to above, there are some activities that have been carried out as part of the submission from the PIC or Contractor side during the quarterly review period, which is listed in the **Table C.1-1** below:

Table C.1-1: Environmental Deliverables

No	Subject/ Deliverables	Date
1	Submission of ToR and quotation for BMBMS by PIC	8th July 2019
2	Submission of Ecological Survey by Contractor	10th July 2019
3	Submission of adjustment in the selection method to shopping method for the procurement of BMBMS by PIC	13th July 2019
4	Approval letter to proceed for shopping method for BMBMS by PIU	31st July 2019
5	Submission of Semi-Annual report by PIC	31st July 2019
6	Recommended change in frequency of Ecological study by PIC	5th August 2019
7	Approval for revised methodology for Terrestrial Study by PIC	11th September 2019
8	Emergency mock drill on earthquake by Contractor	14th August 2019
9	Submission of soft copy of Meteorological data by Contractor	25th September 2019

Some environment-related issues had been observed as part of the monitoring at the project site. The major issues have been highlighted and observation/action taken has been duly reflected as follows:

- 15th July 2019: The Independent Environmental Monitoring Expert visited the PTDP site to review the SEMR and prepare an Environmental Compliance Report for PTDP.

- 22nd July 2019: The PIU, PIC and CW01 Health, Safety and Environment team attended a workshop by ADB on Improving Safeguard Policy Application in South Asia.

- 3rd August 2019: The PTDP project site witnessed the first Zero waste hour, which is observed on the second day of every month for an hour. This is an initiative launched by Her Majesty the Gyaltsuen to achieve zero waste society by 2030 by inculcating behavioural change towards proper waste management. A mass cleaning campaign was conducted at site with representatives from PIU, PIC and CW01.

- 29 – 30th August 2019: CDCL construction seminar was conducted in Thimphu. The seminar covered topics from construction management to EIA reporting. The seminar was attended by Site engineers, CAD/surveyors and environmentalists from Bhutan ADB resident Mission, PIU, PIC and CW-01.

- 7th September 2019: PTDP project witnessed the second Zero waste hour, by cleaning the project surrounding.

- 11th September 2019: After getting approval from PIU for the revised methodology for carrying out terrestrial study, PIC forwarded the approval to CW-01.

- 14th September 2019: The Director, Department of Forest and Park Services (DoFPS), MoAF visited the project site

- 25th September 2019: PIC asked CW-01 to submit raw data of metrological, air, noise, and water data every month.

D. Health and Safety Aspects

D.1 Health and Safety aspects

- 6th July 2019: Fire prevention workshop was conducted to ensure that all workers and helpers working closely with fire are aware of what is required of them in case a fire breaks out.

- 12th July 2019: A notice was despatched by the National Center for Hydrology and Meteorology (NCHM) regarding heavy rainfall in Phuentsholing town with chances of a flash flood. All works were stopped and evacuation of campsites was conducted. CW01 officials living at the project site were evacuated to various locations like the Palm Hotel, housing in Jaigoan, and YDF hall for three days. The ration was provided for all three days to all workers and supervisors.

- 17th July 2019: Safety Officials from other CDCL projects came to the PTDP site to learn and witness the safety practices at the PTDP site to start implementing in their respective project sites. Presentation by AFCONS official on lesson learned from previous AFCONS project was conducted, and experiences were shared among all the participants.

- 20th July 2019: Waste Management and House Keeping workshop was conducted to inform workers and supervisors on proper management and discarding of waste which is produced from work and campsite.

- 26th July 2019: All windows at the worker's camps were installed with nets to ensure that mosquitoes do not enter the dorms. Even though fans are installed in the dorms, for more ventilation the windows are frequently left open due to the heat in Phuentsholing.

- 26th July 2019: Officials from the Phuentsholing general conducted mosquito fogging all around the camp area in light of the dengue outbreak in Phuentsholing

- 27th July 2019: The workshop was conducted on Electrical Safety to ensure workers and supervisors on understanding the work environment, the importance of insulation and material handling.

- 7th & 8th August 2019: An information session on Dengue was jointly conducted by PIU, PIC & AFCONS safety and environment team. This session was conducted to inform and spread awareness to all the employees of PTDP, especially to the individuals residing beyond the project camp, on the outbreak of Dengue, and precautions which need to be taken. As part of the initiative, mosquito repellent creams (ODOMOS) were distributed to all the attendees to ensure necessary prevention of such diseases in future.

- 9th August 2019: AFCONS created a new road at part 3, which will only be used for PTDP vehicles. Speed bumps and speed limit signage's along the new road has been installed. This has reduced the number of private vehicles from entering the project and has become easier to monitor the speed limit of vehicles.

- 20th August 2019: AFCONS safety team initiated a mock drill on Earth Quake. This was to ensure, monitor and prepare employees to respond quickly, calmly and safely in case of earthquake. The drill was also significant in observing the response of the employees and to take note of any issues that might have to be added or changed in the Emergency Response Plan (ERP).

- 7th September 2019: AFCONS conducted a briefing on Hazard identification and risk assessment to inform and spread awareness on to the workers on the importance of hazard identification and assessment of the risk associated with the work in hand.

- 11th September 2019: The HSE team from PIU, PIC and CW-01 along with a representative from the sub-contractor (Rigsar) visited the Rigsar Labor camps and workshop to ensure it complies with the CEMP. The team observed some non-compliance and instructed AFCONS to immediately rectify the issues.

- 14th September 2019: A briefing was conducted on near miss and accident incident and investigation to inform and ensure that the workers were aware on how an accident is noted and investigated.

- 17th September 2019: As part of the observation made by PIC/PIU environment team on non-compliance of CEMP by sub-contractors (M/s Rigsar Construction), AFCONs issued 10 bunk beds and 20 mattresses to Rigsar (sub-contractor) in support of the Rigsar workers working at the PTDP project. AFCONs ensured that the issued beds and mattresses were distributed and being used. AFCONs also provided support to Rigsar related to oil spillage at the Rigsar workshops by providing standard operation procedure for handling of oil and greases in stores and other places of use.

- 21st September 2019: A briefing on HSE code of conduct was conducted to inform the workers on the Do's and Don't's as per the AFCONs HSE policies.

- 28th September 2019: A briefing was conducted on safe movement of vehicles to inform and aware the importance of safe movement of vehicles at the PTDP project site.

- Dust control is being taken care of by sprinkling of water along the road and construction sites. A log sheet is maintained by the drivers to indicate the number of times and location the sprinkler truck was deployed.

Health and safety-related issues have been observed at the site as mentioned below:

Table D.1-1: Recommendation for Health and Safety issues

Issue	Recommendation and action taken
Installation of mosquito nets on windows	Since fog machines are not allowed in Bhutan, and Phuentsholing General Hospital will only conduct pest control treatment every six months, AFCONs was recommended to provide workers with mosquito nets, or repellents for the dorms, and to secure mosquito nets on the windows. They have complied and fixed the nets on some windows, and yet to complete the rest. They have also provided each dorm with mosquito repellents. They are also in the process of procuring the mosquito nets for individual workers.
Installation of bunkbeds and mattresses to subcontractor (Rigsar)	Initially, the workers at the Rigsar camps were sleeping on the floor. After the site visit conducted to their site, AFCONs ensured to provide ten bunk beds and twenty mattresses in support of the workers working for the PTDP project. With the initiative taken by AFCONs, Rigsar will be monitored to ensure that they are providing their workers with the necessary items.
Oil spillage at sub contractor's workshop (Rigsar)	During the HSE site visit to the sub-contractor's workshop which was poorly maintained and multiple spots of oil/grease spillage was pointed out. Rigsar was informed about the risk of soil contamination, and to immediately mitigate the issue and to maintain their workshop properly. AFCONs extended additional support by providing Rigsar with standard operation procedure for handling oil and grease in stores. Rigsar will be monitored by AFCONs to ensure that their workshops are well maintained.

D.2 Accident prevention

From July – September 2019, no serious or near-miss incidents have been reported. For the month of August, four cases of Dengue from AFCONS and two cases from PIC were confirmed by PIU/PIC environment team. Most of these individuals reside in Jaigoan along the Chinese line and Phuentsholing City. The team ensured that the affected employees were immediately granted leave after confirming that the blood results were positive, and were admitted to the Phuentsholing general hospital. No cases of dengue from the individuals residing in the labour camp were reported.

All other cases reported to the First Aid Station were minor issues. All issues or cases are registered at the First Aid Station located at the Project site. The signboard display with accident statistics has been erected at the entrance of the office zone.

D.3 HIV / AIDS Prevention

The first Health and Safety Campaign on "HIV / AIDS prevention, Malaria, Dengue Fever, and Menstrual Health and Safety" was conducted by Phuentsholing General hospital from 21st – 23rd March 2019 as reported in the 2nd QPR

Due to the ongoing Dengue epidemic in Phuentsholing, it was difficult to bring in a health professional to conduct the health and safety campaign. To ensure the safety of the workers at site, an information session on Dengue was jointly conducted by PIU, PIC & AFCONS safety and environment team on 7th & 8th August 2019. This session was conducted to inform and spread awareness to all the employees of PTDP project (especially the ones residing outside the project camps) on the outbreak of Dengue, and precautions, which need to be taken. As part of the initiative, mosquito repellent creams (ODOMOS) were distributed to all the participant to ensure necessary prevention of such diseases in future. A Health and Safety campaign is yet to be conducted by a professional from the Phuentsholing General Hospital.

D.4 Traffic Safety

On 1st March the contractors constructed traffic diversion and rerouting for third party vehicles. This was initiated because the number of third party vehicles plying along the approach road to the project office site was increasing, and was not abiding by the enforced speed limit, making it risky for PTDP passer-by's, generating dust and degrading the air quality in the locality. After the diversion, AFCONs was able to manage the speed limit to the project vehicles, making it safer for the PTDP passer-by's and also not generating as much dust. 9th August 2019, another road was diverted at part 3, which is only accessible for project vehicles. This has drastically reduced the number of private vehicles plying at the project site, which has in return made it easier to monitor the speed limit. The detail on the traffic study is attached as **Appendix 5**.

D.5 Labor Engagement Statistics at the end of the Reporting Period

The contractor only recruits Bhutanese with proper documents and other foreign workers with authentic permits. Work permits are issued to all the Non-Bhutanese Engineers, workers and labours working in Bhutan. As of September 2019, the contractor has employed the following:

- Bhutanese Day Labour (Female) – 19
- Non-Bhutanese Day Labour (Female) – 1
- Bhutanese Day Labour (Male) – 42
- Non-Bhutanese Day Labour (Male) – 15
- Non-Bhutanese Resident Labour (Male) – 128

The labour register and muster roll of the main contractor are maintained and updated.

D.6 Engagement of Vehicle, machines and equipment

The contractor has deployed various vehicle, machines, and equipment at the site either directly or through subcontractors. Vehicles are also checked for proper registration, fitness, and emission certificates. Please refer to **Appendix 3** for all vehicle clearance certificate.

E. Social Safeguard and Communication

E.1 Social Safeguard

No specific action conducted this quarter

E.2 Communication action (website, events…)

CDCL Information Technology team visited the project site on 26th March 2019 and has developed the CDCL website. Information on the PTDP is already available in CDCL website (www.cdcl.bt).

See **Appendix 4** for a comprehensive list of meetings

E.3 Updated Stakeholder Communication Plan

The Project Administration Manual has developed a stakeholder communication plan which was updated as follows:

Table E.3-1: Updated stakeholder communication plan

Project information to be communicated	Means of communication	Resp. Agency	Audience(s)	Frequency
Report and Recommendation of the President	ADB Website (linked documents)	ADB	ADB, DHI, CSOs, beneficiaries and RGoB	Once at Project inception
Procurement and bidding documents	Invitations for bids published on the DHI and CDCL websites and in the newspapers. Information for pre-bid meetings to be published likewise	PMU	Contractors and local suppliers of goods and services ADB, DHI, CDCL	During the procurement period. 1. Project Quarterly Report 2. As per the procurement plan
Construction	The selected construction company(s) will ensure that the construction areas will have signage boards with their contact information	PIU	ADB, DHI, CDCL, Stakeholders	During the construction period. Reported Monthly in Monthly Progress Report
Progress status during construction works and construction issues	Signage boards on site	PIU	ADB, DHI, CDCL General Public	During the construction period. 1. Reported Monthly in Monthly Progress Report 2. For the general public. Within Specific Public event (once a year)
Project performance reports	ADB and DHI Websites	ADB and DHI	Beneficiaries, stakeholders and RGoB	Either Semi-annually or annually once DMF (Design and Monitoring Framework) is set-up.
Safeguard monitoring (Environment and Social monitoring reports)	ADB websites	ADB and CDCL	ADB, DHI, CSOs, beneficiaries and RGoB	Semi-annually (January to June 2019)
Project completion Report	ADB Websites	ADB and CDCL	ADB, DHI	At Project closure

F. Grievance Redress Mechanism

F.1 Grievance Redress Mechanism set-up

A two-tier mechanism is adopted by the project. The first tier is in the field at the PIU level led by PIU head and the second level/tier GRM is led by the PMU head.

Secretariat

The first level secretariat of GRM is established in the PIU office, with PIC/PIU's Health and Safety officer acting as the secretary.

Composition

At the first level GRM, the team called the 'Grievance Redress Committee (GRC)' is established at the PIU level and consist of the PIU head as the lead of GRC. The composition of the first tier GRM is shown in Table 1 hereafter.

Table F.1-1: Composition of the First Tier GRM

Organization	Positions	Names
PIU	Project Manager	Mr. Kamal Dhakal
PIU	Dy Project Manager	Mr. Dawa Tshering
PIU	Environment Manager	Mr. Pushpa Raj Pradhan
PIC	Team Leader / Dy Team Leader	TL / Edwin Anggrijatno
PIC	Safeguard and H&S Specialist	Mr. Megay Penjore
Phuentsholing Constituency	Representative	Mr. Nar Bahadur Rai
Phuentsholing Thuemi	Representative	Mr. Sonam Tenzin
RENEW (Community-based org.)	Representative	Ms. Dechen
Members on-call basis based on the nature of grievance representing relevant section of district office		
Contractor CW-01	Project Manager	Mr. Ravichandran

The composition of the second tier GRM is shown in Table 2 hereafter.

Table F.1-2: Composition of the Second Tier GRM

Organization	Positions	Names
PMU	Project Director	Mr. Tshering Dupchu
PMU	Urban Planner	Ms. Kamala Thapa
PIU	Project Manager	Mr. Kamal Dhakal
PIU	Environment Manager	Mr. Pushpa Raj Pradhan
Central Government / MOWHS	Representative	Mr. Namgay Tshering
RENEW (Community-based org.)	Representative	Ms. Lhaden

F.2 Revised GRM

As part of the site visit by PIC environmental specialist to review and approve the draft CEMP, revisions were proposed in the draft GRM which was endorsed by ADB as part of the CEMP. The changes made were as follows:

Table F.2-1: Comments and observation on GRM by PIC

Chapter; Section Comment	Comment
Issues	It should be mentioned that Grievances related to the Social and Environmental Concerns of the project shall be covered by the GRM
Complaint/ Feedback/ Dropbox	Shall be at the contractor's site office and PIU office with a proper signboard with names and numbers of contact person at all these locations.
Dealing with complaints	It was suggested that minor issues/complaints received may be dealt by PIU and contractor directly as appropriate. But proper recording should be done and reported to the committee.
Register of complaints	All complaints received- written, telephonic, email, verbal, anonymous etc shall be recorded and verified. A proper register should be maintained and reported to the GRM committee.
Corrective Measures to be done by the contractor	Please include how corrective measures would be addressed and borne by the contractor

All the comments have been incorporated and are part of the GRM in the CEMP

F.3 Grievances registered

As of now, no grievances have been registered and grievance reporting format has also been uploaded on the CDCL website (www.cdcl.bt/ptdp/).

G. Design Monitoring Framework and actions agreed during last ADB review mission

G.1 Performance against DMF Indicators

Status of performance against Project Design and Monitoring Framework indicators is shown in **Appendix 1**.

Compliance with loan and grant Covenant updated table is attached in **Appendix 11.**

G.2 Action agreed during last ADB review mission

The Last ADB mission was in May 2019. The progress made in the priority actions of CDCL and DHI are mentioned in the Aide Memoire of the ADB mission from 6 to 18 May 2019. Subsequently an update on the activities and the new timeline were discussed and agreed with the Bhutan's ADB resident team mission on 28th August 2019, which is shown in table G.2-1 below:

Table G.2-1: Status of actions agreed during last ADB review mission

Agreed Actions Schedule					
Sl	**Activity**	**Due Date (ADB)**	**Responsibility**	**CDCL Proposal**	**Remarks/Comments**
Project Management					
1	Thromde letter – clearance for material extraction for PTDP	Immediate	PIU	Complied	letter copy sent to ADB on May 6, 2019, Response received, PIC informed.
2	Contract Variation No. 2 (hydraulic model, FFEWS)	7-Jun-19	PMU/PIU	15-Jun-19	Contract Variation-02 signed on July 26, 2019
3	MIS system fully operational and documented	30-Jun-19	PIC	Agreed	Submitted to ADB on July 9, 2019. Currently operational.
4	RMP prepared	30-Jun-19	PIC/PMU	Agreed	RMP submitted to ADB on July 9, 2019.
5	PPMES included in QPR	15-Jul-19	PIC	Agreed	Submitted to ADB on 20th May 2019, eviewed and approved by ADB on June 6, 2019
6	Submit Quarterly Progress Report to ADB	15-Jul-19	PMU	Agreed	Submitted to ADB on July 30, 2019
7	PMC to hold a meeting with all stakeholders	30-Sep-19	PMU	Agreed	Under Process. Will be done in Dec (sl. No.22)

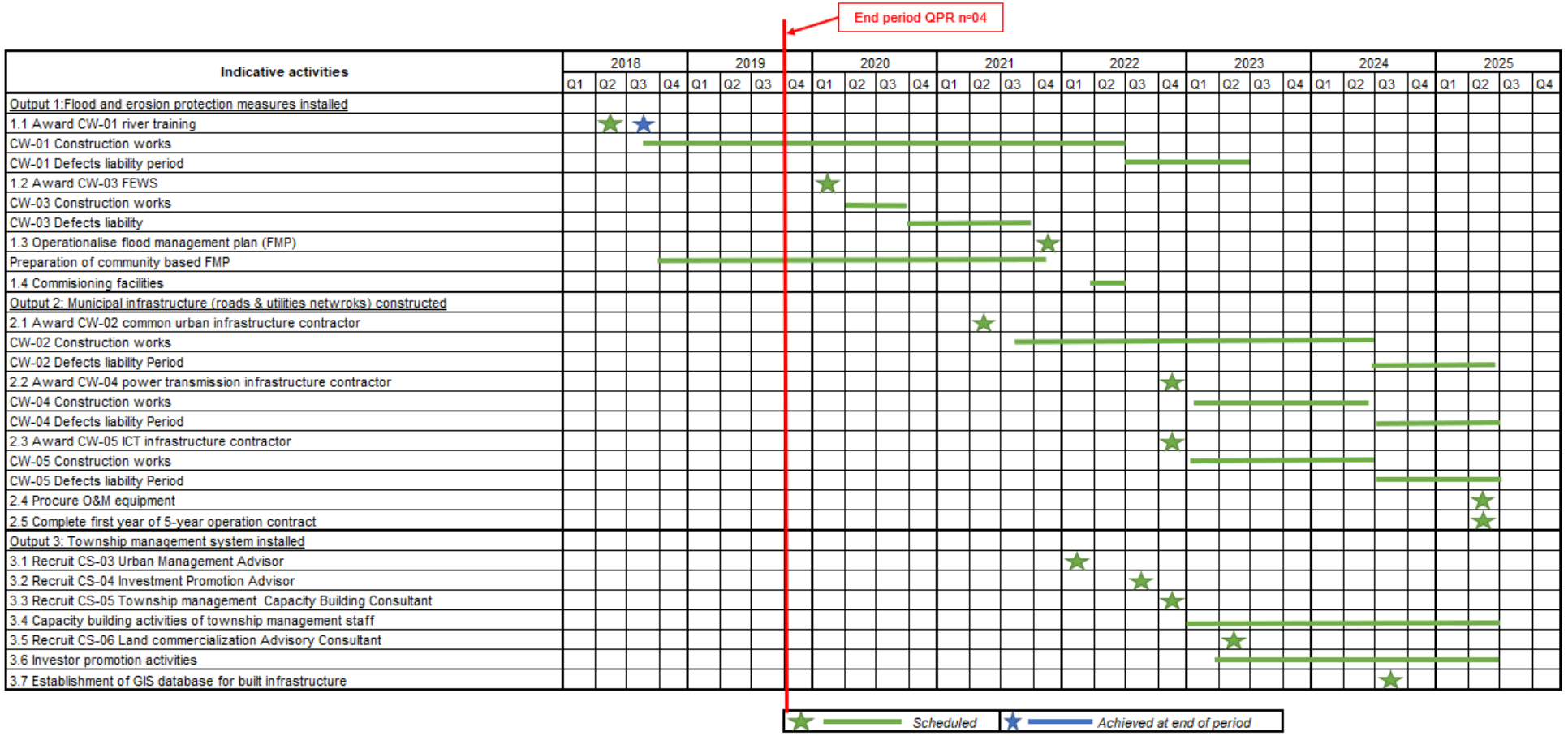
8	Omchhu project inclusion in project action plan	October Mission	PMU/ADB	Agreed	Which division in ADB will take it up is not clear. Wheather SAER or Urban is not clear.
9	Coordination meeting with PCR and LAP	Monthly	PIU	Agreed	2nd Coordination meeting held on July 9, 2019. Separate discussions continues on day to day basis.
CW01 -Technical					
10	NCHM MOU	7-Jun-19	PMU/PIU	30-Jun-19	Draft MoU prepared, endorsed by PMC during 4th PMC meeting (Sept 6, 2019). Waiting for comments/acceptance of draft MoU from NCHM.
11	Conduct Contractor Emergency flood drill	30-May-19	PIU/PIC	15-Jun-19	Carried out on June 27 2019
12	Temporary flood management measures completed	31-May-19	PIU/PIC	30-Jun-19	100% completed on July 31, 2019 (letter from CW-01)
13	Verify the datum used by NLS in the 2015 survey	7-Jun-19	PIU	12-Jun-19	NLCS engaged from 6th June. Final Report received on June 14, 2019. Sent to ADB
14	Response to ADBs sediment technical note comments	7-Jun-19	PIC	30-Jun-19	Responded to ADB, cleared by ADB on July 2, 2019
15	Topography and bathometry survey completed	30-Jun-19	PIU	30-Oct-19	Topo & Bathimetry Survey mobilization underway.
16	CW01 Backfill BOQ rate analysis	30-Jun-19	PIU/PIC	Agreed	Still Under Discussion
17	Hydraulic 2D model finalized	30-Sep-19	PMU	30-Dec-19	Mobilized, inception report submitted to ADB on July 24, 2019
Procurement					
18	Flood management experts mobilized	3-Jun-19	PIU/PMC	1-Jul-19	CV-2 signed. PIC under preparation of FMC work plan. FMC work plan submitted to ADB, awaiting comments.
19	BMBMS recruited under PIC	30-Jun-19	PIC	15-Jul-19	Bid preparation ongoing, NIT to be floated in October, 2019.

20	Comments received from HCP on CW02	30-Jun-19	PMU	Complied	Comments received and forwarded to ADB on May 30, 2019.
21	Submission of Bid Documents CW02	30-Sep-19	PMU	Dec 1st Week	Under Process. Discussed with BHRM to revise the dateline to 2nd week of December, 2019
Safeguards					
22	Public consultation meeting	30-Dec-19	PIU	30-Dec-19	Under Process. Proposed in November last week
23	SEMR (Jan-Jun 2019) to ADB	31-Jul-19	PIU	31-Jul-19	Submitted to ADB on 31st July, 2019
Finances					
23	Submit APFS to ADB	31-Dec-19	PMU	31-Dec-19	Royal Audit to visit PTDP on November 2019. Now changed to Feb 2020 as CDCL follows financial year Jan - Dec.

Appendix 1: Design and Monitoring Framework

	Indicator	Progress
Outcome Phuentsholing's urban area protected from floods and expanded with improved amenities and services	By 2026: a. Phuentsholing and reclaimed land protected from 100-year flood events in the Amochhu River (2018 baseline: Phuentsholing is protected from mean annual floods) b. At least 10% of fully serviced plots tendered for development (2018 baseline: NA)	a. First assessment of the progress of achievement when cast-in-situ wall achieved. Q2/2020. b. confirmation of tender scheduleQ2/2024
Outputs 1. Flood and erosion protection measures installed	By 2025: 1a. 4 km of climate and erosion-resilient river walls constructed to protect against 100-year probable flood (2018 baseline: 0) 1b. At least 66 ha of land reclaimed (2018 baseline: 0) 1c. A flood early warning system and community-based flood management plan established and operational (2018 baseline: NA)	1a. Construction of river protection started in Jan 2019. 21% Achieved. 1b. Construction of backfilling started in Feb 2019. 6.5 % Achieved. Land reclaimed when walkways finished. 1c. Not yet started. FEWS to be installed from Q2/2020 to Q4/2021
2. Municipal infrastructure constructed	2a. 10 km of roads with footpaths, landscaping, and streetlights planned with at least 30% female participation (2018 baseline: 0) 2b. Water treatment plant with a capacity of 4 MLD constructed (2018 baseline: none) 2c. 12 km of new primary and secondary water mains constructed (2018 baseline: 0) 2d. 9 km of new sewer mains and 9 km of new storm drains constructed (2018 baseline: 0) 2e. A sewerage treatment plant with a capacity of 3 MLD constructed (2018 baseline: 0) 2f. A resource recovery system for solid waste management installed (2018 baseline: 0) 2g. A 630 KVA grid substation constructed (2018 baseline: 0) 2h. 16 circuit-km of 415-volt power distribution lines installed (2018 baseline: 0) 2i. 11 circuit-km of telecommunication transmission cables installed (2018 baseline: 0)	To be started with CW02, CW3, CW4 & CW5 start. 2a. To be assessed from Q3/2021. 2b. To be assessed from Q3/2021 2c. To be assessed from Q3/2021 2d. To be assessed from Q3/2021 2e. To be assessed from Q3/2021 2f. To be assessed from Q3/2021 2g. To be assessed from Q2/2022 2h. To be assessed from Q2/2022 2h. To be assessed from Q2/2022
3. Township management systems installed	3a. At least 80% of township management staff reported improved knowledge of modern urban management (2018 baseline: NA) 3b. An asset management system established with 100% of project infrastructure and facilities geocoded in a database (2018 baseline: NA) 3c. At least 10 potential investors attended investor outreach campaigns (2018 baseline: NA)	3a. First assessment in the Year 2024 3b. To be assessed from Q2/2022 3a. To be assessed on Q3/2024

Appendix 2: Updated Implementation Schedule



Appendix 3: PMU, PIU and PIC Details

STAFFS OF PHUENTSHOLING TOWNSHIP DEVELOPMENT PROJECT, CDCL

Project Management Unit (PMU), CDCL

Sl.No	Name	Function
1	Chief Executive Officer	Mr. Phuntsho Gyeltshen
2	Director, Department of Engineering and Construction	Mr. Reezang Wangdi (resigned), new to be recruited
2	General Manager, Finance and Investment Division	Ms. Dechen Wangmo
3	Project Director	Mr. Tshering Dupchu
4	Finance Manager	Mr. Phurba Dorji
5	Project Accountant	Mr. Lhaten Tshering
6	Urban Planner	Ms. Kamala Thapa
7	Legal Officer	Mr. Kinley Dorji
8	Human Resources Manager	Mr. Kencho Tshering

Project Implementation Unit (PIU), CDCL

Sl.No	Function	Name
1	Project Manager	Mr. Kamal Dhakal
2	Dy. Project Manager	Mr. Dawa Tshering
3	Environment Manager	Mr. Pushpa Raj Pradhan
4	Stakeholder Manager	Mr. D.B Ghalley
5	Adm.Officer (Document Control)	Ms. Tshering Pelden
6	Health and Safety Inspector	Mr. Yeshey Wangdi
7	Site Inspector	Ms. Kinley Dema
8	Asst. Document controller	Ms. Kezang Lhaden
9	Driver	Mr. Rinzin Dorji

Project Implementation Consultant (PIC)

Sl.No	Function	Name
1	Team Leader / Chief Resident Engineer	Mr. Mehmet Kahraman
2	Deputy Team Leader/RE	Mr.Edwin Aggrijatno
3	Construction Manager/QLE	Mr.Sonam Tobgay K
4	Material Engineer	Mr. Dwarika Gotamey
5	Quantity Surveyor	Mr. Karma Dezang
6	National Hydraulic Engineer/ Flood Early Warning System Specialist	Mr. Chhimi Dorji
7	Safeguard and Communication Specialist	Mr. Megay Penjore
8	Environmentalist	Ms. Sonam Deki
9	Office Manager	Ms. Sangay Choizom
10	Accountant	Ms. Dorji Lhamo
11	Assistant Office Manager	Ms. Namgay Lhamo Tenzin
12	MIS/IT	Mr. Pema Namgay
13	AutoCAD	Mr. Phuntsho Namgyal
14	Site Inspector	Mr. Prem Kumar Ghalay
15	Site Inspector	Mr. Tashi Namgyel
16	Land Topography Surveyor	Mr. Namgay Wangchuk
17	Lab Technician	Ms. Yangchen Seldon
18	Land Topography Surveyor	Mr. Karma Wangchuk
19	Lab Technician	Ms. Tandin Wangmo
20	Assistant Surveyor	Mr. Drutuk Zangpo
21	Driver	Mr. Suresh Rai

22	Driver	Mr. Choki Dorji
23	Messenger	Ms. Yeshi Dolma
24	Office Guard	Mr. Jurmey Namgay

Intermimittent key experts will be present as per their requirement.

Appendix 4: List of particular meetings, training/workshops and visits

Appendix 4.1 List of particular meetings from 1st July to 30th September 2019

No.	Subject	Date	Location	Attendees
1.	PTDP & PCR Meeting No. 3	09th July 2019	PIU Meeting Room, Phuentsholing	PIU, PIC, PCR
2.	Video Conference with ADB	24th July 2019	Thimphu	ADB, CDCL, PIU, PIC
3.	2D Hydraulic process with PIC National Hydraulic Engineer	12 August 2019	PIU Meeting Room, Phuentsholing	PIU, PIC, NHE
4.	3rd Monthly Coordination Meeting (PIU, PIC & CW01)	23rd August 2019	CW01 Conference Room, Phuentsholing	PIU, PIC, CW01
5.	Techincal Discussion	13th September 2019	PIU Meeting Room, Phuentsholing	PIU, PIC
6.	Special Discussion (PCR & PTDP)	13th September 2019	PIU Meeting Room, Phuentsholing	PCR, PTDP (PIU & PIC)

Appendix 4.2 List of training and workshops from 1st July to 30th September 2019

No	Subject	Date	Location	Attendees
1.	CDCL Health & Safety Training	17th July – 18th July 2019	CW01 Conference Room, Phuentsholing	PIU, PIC, CW01, CDCL
2.	TAA569-REG- Improving Safeguard Policy Applications in South Asia Developing Member Conutries	22nd July 2019	Hotel Ga Me Ga, , Phuentsholing	PIU, PIC, CW01
3.	Information Session on Dengue	7th August – 8th August 2019	CW01 Conference Room, Phuentsholing	PIU, PIC, CW01
4.	Construction Seminar	29th August – 30th August 2019	Royal University of Bhutan, Thimphu	CDCL, PIC, CW01, Other Stakeholders

Appendix 4.3 List of visits from 1st July to 30th September 2019

No.	Subject	Date	Location	Attendees
1.	Ministry of Economic Affairs	10th July 2019	Site Project, Phuentsholing	PIU, PIC, CW01, MoEA
2.	CDCL Health & Safety Team	17th July – 18th July 2019	Project Site , Phuentsholing	PIU, PIC, CW01, CDCL
3.	Hon'ble Prime Minister's visit to site	08th September 2019	Site Project, Phuentsholing	PIU, PIC, CW01
4.	PPTA TEAM (ADB), Urban Development Specialist and Procurement Specialist	25th Spetember – 30th September 2019	Site Project, Phuentsholing	ADB, PIU, PIC
5.	Project review team from Druk Holding & Investment	30th September 2019	PIU Office, Phuentsholing	DHI, PIU, PIC

Appendix 5: Traffic study

The project has the Samtse-Phuentsholing highway running along its boundary and at the northern end of the project site lies a private quarry. This quarry has one of its approach road crossing the project diaphragm wall alignment. Every day heavy vehicles ply on this road which poses risk to the project vehicles as well as the project employees. Often heavy vehicles are seen speeding on this road that not only generates a lot of dust but also poses risk to the project workers. Despite speed breakers and speed limit signage that have been placed at strategic locations, the risk factor is still present.

After the road diversion works done on 1st March 2019, the approach road to the project office site is safe as compared to the months prior to that. Now it is mainly the project vehicles plying in and out of the site, small private vehicles dropping off individuals working in the project or heavy vehicles transporting construction materials to and from the project site. On 9th August 2019, another road was diverted at part 3, which is only accessible for project vehicles. This has drastically reduced the number of private vehicles plying at the project site, which has in return made it easier to monitor the speed limit.

To illustrate interference with third parties' vehicles, PIC asked the Contractor to conduct simple traffic counts to identify the vehicle type and origin. The traffic counts shown below are for the months from July – September. **Table 1** below gives the traffic results, which shows that the road used by the project vehicles is minimal in comparison to third party vehicles.

Table 1: Traffic counts from July – September 2019

DAY								
Location / Date / Time	**Project LV**	**Project HV**	**Trailer**	**Project Total**	**Others LV**	**Others HV**	**Trailer**	**Others Total**
25/07/2019	97	53	7	**157**	1129	1325	29	**2483**
NIGHT								
Location / Date / Time	**Project LV**	**Project HV**	**Trailer**	**Project Total**	**Others LV**	**Others HV**	**Trailer**	**Others Total**
09/07/2019	2	3	0	**5**	112	18	1	**131**
DAY								
Location / Date / Time	**Project LV**	**Project HV**	**Trailer**	**Project Total**	**Others LV**	**Others HV**	**Trailer**	**Others Total**
20/08/2019	34	33	2	69	2064	1372	12	3448
NIGHT								
Location / Date / Time	**Project LV**	**Project HV**	**Trailer**	**Project Total**	**Others LV**	**Others HV**	**Trailer**	**Others Total**
20/08/2019	0	0	2	**2**	120	88	0	**208**
DAY								
Location / Date / Time	**Project LV**	**Project HV**	**Trailer**	**Project Total**	**Others LV**	**Others HV**	**Trailer**	**Others Total**
20/09/2019	150	83	8	**241**	1417	1154	14	**2585**
NIGHT								
23/09/2019	29	6	0	**35**	112	84	2	**198**

Result

- The day survey is conducted from 8:00 AM – 5:00 PM with a lunch gap of one hour

- The night survey is conducted from 8:00 PM – 8:00 AM

In comparison to past traffic survey there has been a slight increase in project vehicles. Now that the monsoon season has ended and the project has resumed off at full swing where it left off. There are more locations they are working on, which has also increased the number of vehicles plying in and out with materials.

Appendix 6: Updated Procurement Plan and Contract Award Schedule

Phuentsholing Township Development Project

No.	Package	Procurement Plan Amount($ millions)		Note	Type	Implementation Period	Current Status of Designs/Bid Documents	Submission Date to CDCL	Submission Date to ADB for Clearance	Advertize Bid	Bids Submitted	Submission Date of TDER to ADB for clearance	Submission Date for FBER to ADB for Clearance	Target date of Contract Award	Start Date
Works & Goods															
1	CW-01	35	River training and land reclamation	1	ICB	Q4-2018 to Q2-2022			14-Mar-17	25-May-17				18-Jul-18	27-Aug-18
2	CW-02	11,2	Common Urban Infrastructure		ICB	Q3-2021 to Q2-2024		10-Dec-20	24-Dec-20	28-Jan-21	11-Mar-21	8-Apr-21	13-May-21	3-Jun-21	1-Jul-21
3	CW-03	0,2	Flood warning system		ICB Goods	Q2-2020 to Q3-2020		11-Nov-19	18-Nov-19				12-Feb-20	11-Mar-20	1-Apr-20
4	CW-04	0,5	Power transmission infrastructure		FA	Q1-2023 to Q2-2024									
5	CW-05	0,9	ICT infrastructure		FA	Q1-2023 to Q2-2024									

No.	Package	Procurement Plan Amount($ millions)		Note	Type	Implementation Period	Current Status of Designs/Bid Documents	Submission Date to CDCL	Submission Date to ADB for Clearance	Advertize Bid	Bids Submitted	Submission Date of TDER to ADB for clearance	Submission Date for FBER to ADB for Clearance	Target date of Contract Award	Start Date
Consultants															
1	CS-01	5,7	Project Implementation Consultant	2	QCBS 90:10	Q3-2018 to Q2-2025			6-Dec-16	21-Feb-17	15-May-17				29-Oct-18
2	CS-02	0,25	Independent environmental monitoring expert		ICS	Q4-2018 to Q2-2025		16-Sep-18	23-Sep-18	13-01-19	21-01-19	31-01-19		4th April 2019	15-Jul-19
3	CS-03	0,1	Urban management advisor		ICS	Q2-2022 to Q1-2025		18-Mar-22	25-Mar-22	29-Apr-22		3-Jun-22			1-Jul-22
4	CS-04	0,1	Investment promotion advisor		ICS	Q4-2022 to Q1-2025		18-Jun-22	25-Jun-22	30-Jul-22		3-Sep-22			1-Oct-22
5	CS-05	1,3	Sustainable township management capacity developmen		QCBS 90:10	Q1-2023 to Q2-2025		6-May-22	23-May-22	10-Jul-22	4-Sep-22	2-Oct-22	30-Oct-22	4-Dec-22	1-Jan-23
6	CS-06	1,1	Investor promotion and transaction advisory services		QCBS 90:10	Q3-2023 to Q2-2025		3-Nov-22	10-Nov-22	7-Jan-23	4-Mar-23	1-Apr-23	29-Apr-23	3-Jun-23	1-Jul-23

achieved
pending
overdue
actual dates

	Indicative Durations						
ICB Works	14	35	42	28	35	21	28
ICB Works	7			86	28		
NCB Goods	7			72	28		
QCBS	7	58	56	28	28	35	28
ICS	7	35		35			28

Notes:

1 Includes cross drainage structures, land formation, and about $250K for supply and
2 to include prov sum packages for traffice management study ($100K), preparation of emergency management plan ($200K), and

Details on Contract award process

Contract	Bid prepa.	Bid period	Bid evaluation	Award & Negotiation	LTP
CW-01 River Training	Q1 2017	Q1& Q2 2017	Q2 2017	Q2 2018	12 Sep. 2018
CW-02 Common urban infrastructure	Q2& Q3 2019				
CW-03 Flood early warning system	Q3 2019				
CW-04 Power transmission infrastructure	Q3 2020				
CW-05 ICT infrastructure					
CS-01 PIC	Q1 2017	Q2 & Q3 2017	Q3 2017	Q3 2017	17 Sep. 2018
CS-02 Environment monitoring expert.	Q4 2018	Q1 2019	Q1 2019	Q2 2019	4th April 2019

Appendix 7: Updated Investment Cost

Project Investment Plan

(in $ million / Assumption Nu.67.97=$1.00 as of 31 Dec.2016)

Sources	Amount / Share	
	Amount	%
Asian Development Bank[a]	**53.00**	**84.1**
Ordinary capital resources (concessional loan)	28.74	45.6
Special Funds resources (ADF grant)	24.26	38.5
Government	**10.00**	**15.9**
	63.00	**100.0**

[a]Disaster Risk Reduction Fund will finance $6.07 million equivalent of the concessional OCR loan and $6.07 million of the ADF grant.

Source: ADB – PAM May 2018

Investment costs from Loan and Grant agreements

(in $ million)

Investment costs	Total Amount (Taxes included)		ADB Loan		ADB Grant		Government*			
	Cur.	Amount	Amount	%	Amount	%	Costs	Taxes & duties	Total	%
Civil Works	USD	37.59	15.05	40	19.57	52	2.97		2.97	8
Consultancy Services (PIC)	USD	7.55	7.42	98				0.13	0.13	2
Recurrent Cost	USD	2.73					2.73		2.73	100
Contingencies	USD	14.07	6.27	45	4.69	33	3.11		3.11	22
Financial Charges	USD	1.05					1.05		1.05	100
	Total	**63.00**	**28.74**		**24.26**		**9.86**	**0.13**	**10**	**16**

Breakdown of Investment costs per Contracts and amounts used.

Investment costs	Contracts Amount (Taxes included)		Certified until this month* (May 2019)		Certified this Month*(June 2019)		Certified this Month*(July 2019)		Certified this Month*(August 2019)		Total Certified incl. this month*	
	Cur;	Amount	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%
Civil Works Contracts (CW-01)	BTN	2,934,669,207	420,261,556	14.5	49,406,689	1.7	74,723,787	2.5	99,571,657	3.4	643,963,689	22.2
Consultancy Services (CS-01 PIC)	USD	4,138,144	401,121.26	9.7	25,760.00	0.6	41,524.00	1.0	18,440.00	0.4	486,845	11.8
	BTN	91,474,227	9,770,933.33	10.7	1,697,167	1.9	2,540,100	2.8	2,144,333	2.3	16,152,533	17.7

* Amount of works and services billed in the table above excludes taxes. The data are from invoice of June, July and August 2019

Appendix 8: Contract and disbursement S-Curve, ADB Loan and ADB Grant

Appendix 8.1 Status of Disbursement of Project Funds

Cat	Description/ name	Budget Allocation (mil. US$) (a)	Contracts Awarded (mil. US$)a (b)	Uncontracted Balance (mil. US$) (c) = (a - b)	Total Disbursed (mil. US$) (d)	Undisbursed Amount (mil. US$) (e) = (a -d)
Loan	Civil Works	15.05	15.05	0	0	15.05
	Consulting services	7.42	5.34	2.08	0.65	6.77
	Contingencies - Physical	1.46		1.46		1.46
	Contingencies - Financial	4.82		4.82		4.82
	Sub total	**28.74**	**20.39**	**8.35**	**0.65**	**28.09**
Grant	Civil Works (CW-01)	19.57	19.57	0	7.4	12.17
	Contingencies - Physical	1.96	1.96	0		1.96
	Contingencies - Financial	2.73	2.36	0.37		2.73
	Sub total	**24.26**	**23.89**	**0.37**	**5.90**	**18.36**
Gov.	Civil works	2.97	2.97	0	0.02	2.95
	Consulting services	0.13	0.13	0.0	0.006	0.124
	PMU and PIU Expenditures	1.67	N/A	1.67	0.22	1.45
	Training	0.21	0	0.21	0.04	0.17
	Operation and Maintenance	0.86	0	0.86	0.54	0.32
	Contingencies - Physical	1.70	1.70	1.38		1.7
	Contingencies - Financial	1.40		1.40		1.4
	Financial charges	1.05		1.05		1.05
	Sub total	**10.00**	**3.07**	**6.71**	**0.83**	**9.17**

a Equivalent amount at signing date CW-01 Contract, Nu.2,934,669,207=41.63million$ and PIC Contract, 5,44 million$ at 1US$ = 70.5 BTN

Note for CW-01 Contract amount, 41.63million$, remaining balance from Loan, 15.05, Grant, 19.57 and DHI, 2.97 is 4.04million$. If affected on an equal proportion of Civil Works items (Loan, 40%, Grant, 52% and Gov., 8%) to Physical Contingencies. Loan and Grant remaining amounts insufficient.

Appendix 8.2 Schedule of contracts award and disbursement for Loan 3668-BHU

Exchange rate 1USD=70BTN

PTDP Loan: Contract Awards and Disbursement($Million)

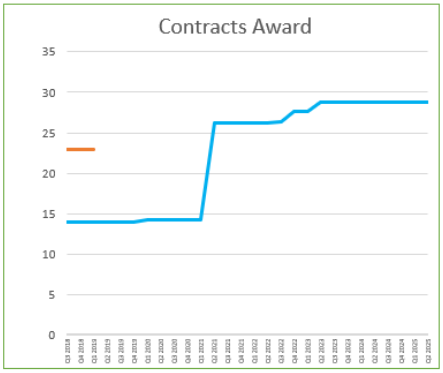
	Contract Awards($Million)					Disbursements($Million)				
Year	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total
2018			14,04		14,04				1,38	1,38
2019					0	0,64	0,64	0,64	0,65	2,57
2020	0,2				0,2	0,64	0,64	0,74	0,75	2,77
2021		11,94			11,94	0,64	0,64	0,64	1,84	3,76
2022		0,1	0,1	1,28	1,48	1,54	1,54	1,54	1,54	6,16
2023		1,08			1,08	1,1	1,22	1,22	1,36	4,9
2024					0	1,36	1,36	1,36	1,36	5,44
2025					0	0,46	1,3			1,76
	Total contract award				28,74	Total Disbursements				28,74

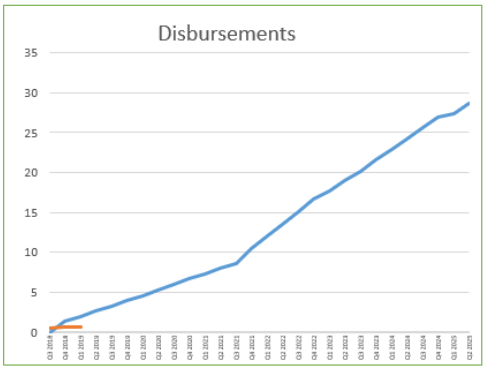
Loan conracts Award ($million)

	Target		Actual	
Quarter	Amount	Cumul.	Amount	Cumul.
Q3 2018	14,04	14,04	23,01	23,01
Q4 2018	0	14,04	0	23,01
Q1 2019	0	14,04	0	23,01
Q2 2019	0	14,04	0	23,01
Q3 2019	0	14,04	0	23,01
Q4 2019	0	14,04	0	23,01
Q1 2020	0,2	14,24	0	23,01
Q2 2020	0	14,24	0	23,01
Q3 2020	0	14,24	0	23,01
Q4 2020	0	14,24	0	23,01
Q1 2021	0	14,24	0	23,01
Q2 2021	11,94	26,18	0	23,01
Q3 2021	0	26,18	0	23,01
Q4 2021	0	26,18	0	23,01
Q1 2022	0	26,18	0	23,01
Q2 2022	0,1	26,28	0	23,01
Q3 2022	0,1	26,38	0	23,01
Q4 2022	1,28	27,66	0	23,01
Q1 2023	0	27,66	0	23,01
Q2 2023	1,08	28,74	0	23,01
Q3 2023	0	28,74	0	23,01
Q4 2023	0	28,74	0	23,01
Q1 2024	0	28,74	0	23,01
Q2 2024	0	28,74	0	23,01
Q3 2024	0	28,74	0	23,01
Q4 2024	0	28,74	0	23,01
Q1 2025	0	28,74	0	23,01
Q2 2025	0	28,74	0	23,01

Loan Disbursements ($million)

	Loan		Actual	
	Quarter	Cumul.	Quarter	Cumul.
Q3 2018	0	0	0,58	0,58
Q4 2018	1,38	1,38	0,05	0,63
Q1 2019	0,64	2,02	0	0,63
Q2 2019	0,64	2,66	0	0,63
Q3 2019	0,64	3,3	0	0,63
Q4 2019	0,65	3,95	0	0,63
Q1 2020	0,64	4,59	0	0,63
Q2 2020	0,64	5,23	0	0,63
Q3 2020	0,74	5,97	0	0,63
Q4 2020	0,75	6,72	0	0,63
Q1 2021	0,64	7,36	0	0,63
Q2 2021	0,64	8	0	0,63
Q3 2021	0,64	8,64	0	0,63
Q4 2021	1,84	10,48	0	0,63
Q1 2022	1,54	12,02	0	0,63
Q2 2022	1,54	13,56	0	0,63
Q3 2022	1,54	15,1	0	0,63
Q4 2022	1,54	16,64	0	0,63
Q1 2023	1,1	17,74	0	0,63
Q2 2023	1,22	18,96	0	0,63
Q3 2023	1,22	20,18	0	0,63
Q4 2023	1,36	21,54	0	0,63
Q1 2024	1,36	22,9	0	0,63
Q2 2024	1,36	24,26	0	0,63
Q3 2024	1,36	25,62	0	0,63
Q4 2024	1,36	26,98	0	0,63
Q1 2025	0,46	27,44	0	0,63
Q2 2025	1,3	28,74	0	0,63





Appendix 8.3 Schedule of contracts award and disbursement for Grant 0573-BHU

PTDP Grant: Contract Awards and Disbursement($Million) Exchange rate 1USD=70BTN

Contract Awards($Million) Disbursements($Million)

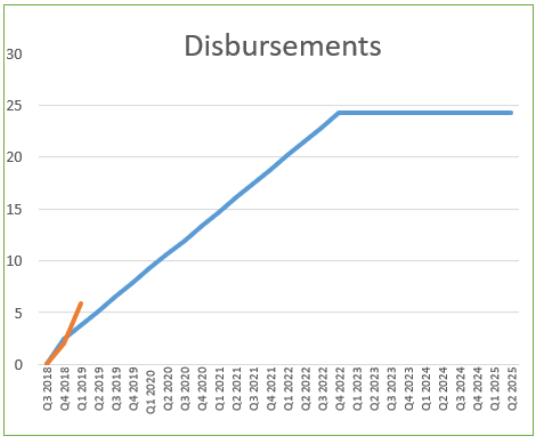
Year	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total
2018			24,26		24,26				2,43	2,43
2019					0	1,37	1,37	1,37	1,37	5,46
2020					0	1,37	1,37	1,37	1,37	5,46
2021					0	1,37	1,37	1,37	1,37	5,46
2022					0	1,37	1,37	1,36	1,36	5,45
2023					0					0
2024					0					0
2025					0					0
	Total contract award				24,26	Total Disbursements				24,26

Grant conracts Award ($million)

	Target		Actual	
Quarter	Amount	Cumul.	Amount	Cumul.
Q3 2018	24,26	24,26	23,89	23,89
Q4 2018	0	24,26	0	23,89
Q1 2019	0	24,26	0	23,89
Q2 2019	0	24,26	0	23,89
Q3 2019	0	24,26	0	23,89
Q4 2019	0	24,26	0	23,89
Q1 2020	0	24,26	0	23,89
Q2 2020	0	24,26	0	23,89
Q3 2020	0	24,26	0	23,89
Q4 2020	0	24,26	0	23,89
Q1 2021	0	24,26	0	23,89
Q2 2021	0	24,26	0	23,89
Q3 2021	0	24,26	0	23,89
Q4 2021	0	24,26	0	23,89
Q1 2022	0	24,26	0	23,89
Q2 2022	0	24,26	0	23,89
Q3 2022	0	24,26	0	23,89
Q4 2022	0	24,26	0	23,89
Q1 2023	0	24,26	0	23,89
Q2 2023	0	24,26	0	23,89
Q3 2023	0	24,26	0	23,89
Q4 2023	0	24,26	0	23,89
Q1 2024	0	24,26	0	23,89
Q2 2024	0	24,26	0	23,89
Q3 2024	0	24,26	0	23,89
Q4 2024	0	24,26	0	23,89
Q1 2025	0	24,26	0	23,89
Q2 2025	0	24,26	0	23,89

Grant Disbursements ($million)

	Target		Actual	
Quarter	Amount	Cumul.	Quarter	Cumul.
Q3 2018	0	0	0	0
Q4 2018	2,43	2,43	2,07	2,07
Q1 2019	1,365	3,795	3,83	5,9
Q2 2019	1,365	5,16	0	5,9
Q3 2019	1,365	6,525	0	5,9
Q4 2019	1,365	7,89	0	5,9
Q1 2020	1,365	9,255	0	5,9
Q2 2020	1,365	10,62	0	5,9
Q3 2020	1,365	11,985	0	5,9
Q4 2020	1,365	13,35	0	5,9
Q1 2021	1,365	14,715	0	5,9
Q2 2021	1,365	16,08	0	5,9
Q3 2021	1,365	17,445	0	5,9
Q4 2021	1,365	18,81	0	5,9
Q1 2022	1,365	20,175	0	5,9
Q2 2022	1,365	21,54	0	5,9
Q3 2022	1,36	22,9	0	5,9
Q4 2022	1,36	24,26	0	5,9
Q1 2023	0	24,26	0	5,9
Q2 2023	0	24,26	0	5,9
Q3 2023	0	24,26	0	5,9
Q4 2023	0	24,26	0	5,9
Q1 2024	0	24,26	0	5,9
Q2 2024	0	24,26	0	5,9
Q3 2024	0	24,26	0	5,9
Q4 2024	0	24,26	0	5,9
Q1 2025	0	24,26	0	5,9
Q2 2025	0	24,26	0	5,9



Appendix 9: Monthly Environmental Monitoring Review for 4th Quarter (July – September 2019)

Introduction

This environmental aspect is prepared in compliance with the Contractors Environmental Management Plan (CEMP) for the Phuentsholing Township Development Project (PTDP). The project is financed with support from the Asian Development Bank (ADB) & Druk Holding and Investments (DHI). DHI is the Project Owner and the Executing Agency (EA) and Construction Development Corporation Limited (CDCL), is the Implementing Agency (IA). The Civil work contract of package CW-01 has been awarded to M/s AFCONS Infrastructural Limited, India. For supervising the Contractor's works, the CDCL has appointed M/s EGIS International as Engineer.

Purpose

Based on the Environmental monitoring carried out by PIC and PIU environment team and the Environmental monthly reports submitted by the contractor during the period July to September 2019, a summary of the environmental monitoring review has been prepared. The purpose of this section provides a review of the status of environmental safeguards and monitoring activity that is being adopted and supervised at the project site.

Project Update

Mobilization of manpower, equipment, construction of office and camp area, setup of basic amenities being completed, and the project is the first stage of construction activities for river training works, such as the start of construction diaphragm-wall, first outfalls construction and the start of backfilling construction

Works Progress

Works Progress are detailed in Chapter B3 "Implementation of physical works" of the present report.

Methodology for Environmental Monitoring

The monitoring methods used are visual inspection, informal interview of workers and residents and photographic documentation. Checklists for monitoring environmental compliances have also been developed jointly by PIC/PIU. The Environmental monitoring implementation plan had been developed as part of the CEMP and is shown as follows:

Environment Monitoring Implementation Plan					
Activities	**Locations**	**Numbers**	**Frequency**	**Remarks**	**Parameters**
Contractors Environmental Monthly Report	Zone A	12	12x /year	Contractor	As per the Outline
PIC monthly report	Zone A	12	12x /year	PIC	As per the Outline
Quarterly Report	Zone A	4	4x /year	PIC	As per the Outline
Semi-Annual Report	All PTDP Zones	2	2x /year	PIC	As per the Outline
Air Quality Monitoring	All PTDP Zones	6	2x /week	Based on site roster for each station	TSPM, PM2.5, PM10, SO2, NOX, CO
Noise	All PTDP Zones	6	Monthly	24 hours/ Work hours	Decibels- dB (A)
Noise	Zone A	3	Weekly	Instantaneous (1m, 3m, 5m)	Decibels- dB (A)

Water Quality Monitoring	All PTDP Zones	8	2x / year	April and October	pH, Color, Electrical conductivity, TDS, Turbidity, Ammonia Nitrogen, Ca, Mg, Na, K, Salinity, COD, BOD, Cl, Phenol, Sulphates, Nitrate, fluoride, DO, SAR, TSS, cyanide, heavy metals, total coliform and faecal coliform
Water Quality Monitoring	Zone A	2	Monthly	By 15th of each month	
Ground Water Quality	Zone A	2	2x / year	April and October	
Soil Testing/ Ground Contamination Monitoring	Zone A	1	Monthly	By 15th of each month	Visual observation of contamination from oil, grease and other foreign materials.
Meteorology	Zone A	1	1 hourly	Monthly Weather Report. By 15th of the following month	Wind speed, Wind Direction, Temperature, Relative Humidity, Rainfall
Ecology	All PTDP Zones	All Zones	4x / year	January, April, July, and October	Terrestrial flora and fauna, Zooplankton, Phytoplankton, Benthos & fishes
Biodiversity monitoring and benchmarking study (BMBMS)	All PTDP Zones	All	4x / year - for 3 years	January, April, July, and October. To be completed by External specialist. TOR prepared by PIC Environmental Specialist	Terrestrial flora and fauna, Zooplankton, Phytoplankton, Benthos & fishes

Environmental Monitoring schedule, activities and analysis

The comprehensive schedule of environmental monitoring activities carried out from July to September 2019 is enclosed here below:

Parameters	Location	Frequency	July 2019	August 2019	September 2019	Results / Comments
Contractors Environmental Monthly Report	Zone A	12x /year	05/08/2019 for July	06/09/2019 for August	05/10/2019 for October	Submitted by Contractor
PIC monthly report	Zone A	12x /year	15/08/2019 for July	19/09/2019 for August	17/10/2019 for September	Submitted by PIC
Quarterly Report	Zone A	4x /year	Ø	Ø	17/10/2019 July – Sept.	Submitted by PIC
Semi-Annual Report	Zone A	2x /year	Ø	Ø	Ø	Submitted by PIC
Air quality	6 location	2x /week	01/07/2019-31/07/2019	01/08/2019-31/08/2019	01/09/2019-30/09/2019	Results have been submitted in the contractor's monthly report.
Noise – All PTDP zones	6	Once every month	01/07/2019-31/07/2019	01/08/2019-31/08/2019	01/09/2019-30/09/2019	Results have been submitted in the contractor's monthly report.
Surface Water quality – All PTDP zones	10	2x / year	Ø	Ø	20 – 21 September	SW01 – SW10 results have been submitted in the contractor's monthly report
Surface Water quality – Zone A	2	Monthly	20th July	20th August	20 – 21 September	Results SW01 & SW10 has been

						submitted in the contractor's monthly report
Groundwater quality	Zone A	2x / year	Ø	Ø	Ø	The 2nd groundwater quality was carried out in May 2019. 3rd sampling to be carried in November 2019
Soil Testing/ Ground Contamination	Zone A	Monthly	Ø	Ø	Ø	Visual observation has been submitted in the contractor's monthly report
Meteorology	Zone A	1 hourly	01-31 July 2019	01-31 August 2019	01-30 September 2019	Meteorology station setup place on 6th March 2019. The result has been submitted as part of the contractor's monthly report
Ecology	All PTDP Zones	4x / year	Ø	Ø	16th September	Terrestrial walkthrough
Biodiversity monitoring and benchmarking study (BMBMS)	All PTDP Zones	4x / year - for 3 years	Ø	Ø	Ø	Finalizing BMBMS quotation

Based on the above environmental monitoring carried out, an in-depth analysis has been provided as follows;

Air Quality[1]

The ambient air quality monitoring is being carried out along six locations of the PTDP project premises. To ensure that the project does not cause or contributes towards the already existing pollution in Phuentsholing town, parameters like TSPM, PM 10 and PM 2.5 are being carried out at each station twice every week. Depending on the results of the monthly tests, mitigation measure is being strictly implemented.

The PTDP project site is situated along the main Phuentsholing-Samtse highway. All six locations were within the permissible limit for the month of July and August. Whereas for the month of September four location AA02,AA03,AA05 & AA06 indicated high TSPM and PM10.

Multiple external factors are contributing towards the high level of air pollution at the four locations along with the PTDP project site:

- TSPM and PM 2.5 for locations AA02, AA03 & AA05 were high on the 3rd, 5th and 7th September 2019 respectively, as the rainfall recorded on those were 1 mm, Below Detectable Limit (BDL) and 2.5 mm respectively. In addition the temperature recorded for all three days were 30.1ºC, 28.8ºC and 31.8ºC, which was higher in comparison to the average value of 27.8 ºC for the month of September.

[1]The air quality monitoring station (AA03 and AA06) has been shifted to NHDCL colony and near the Rigsar batching plant to assess impact on the project camp and lay down area at Zone A since Feb 2019.

- The Phuentsholing Chamkhun Road is preparing to start their work which is along the AA02 and AA03 station. There is an increase in heavy vehicles plying along the unpaved road with construction materials, which are all contributing towards the increase of pollution in the area.

- The location of AA06, which is behind the project office site, has majority of the construction activities (boulder export) taking place right along the AA06 station. Rigsar and Yangkhil's sites are also located near the AA06 location.

- With the diversion of the road, backfilling work along the station and the monsoon season coming to an end, settled dust is being suspended into the air as the road is unpaved, and the emission from the movement of vehicles are all factors contributing towards the sudden rise in pollutants in the locations.

- PTDP is not the only ongoing activity in the area Rigsar and Yangkhil have been asked to complete their dredging work by the end of October 2019, due to which emission from their machines and increase in heavy vehicles moving along the project route transporting boulders and gravels to and from the Rigsar & Yangkhil site.

- Trucks are also parked along the Phuentsholing-Samtse highway, and due to congestion, the emission from vehicles are another contributor towards a high level of TSPM, PM10 and PM 2.5. In addition, there are many workshops located along the highway and emissions from vehicles and equipment used from the workshops are another contributor to the high level of pollutants in the vicinity.

- Increase in vehicular movements along the Phuentsholing – Samtse highway suspend the settled dust soaring into the air, occasionally causing obscure vision temporarily.

Average Data From July-September							
Station Code		**TSPM (µg/m3)**	**PM10 (µg/m3)**	**PM2.5 (µg/m3)**	**NO_X (µg/m3)**	**SO_2 (µg/m3)**	**CO (µg/m3)**
	NEC Standard	**200**	**100**	**-**	**80**	**80**	**2000**
	IFC Standards	**-**	**150**	**75**	**125**	**200**	**160**
AA01 (Near B-Mobile Tower)	**Maximum**	84.81	35.9	22.5	0.35	0	0
	Minimum	26.28	7.56	8.34	0	0	0
	Average	50.79	21.17	15.02	0.183	0	0
AA02 (Near the STP plant)	**Maximum**	142.08	48.30	47.61	1.53	0	0
	Minimum	4.85	3.82	0.67	0	0	0
	Average	62.72	22.38	19.32	0.3	0	0
AA03 (NHDCL Colony)	**Maximum**	145.13	60.68	53.51	0.83	0	0
	Minimum	9.55	5.06	2.55	0	0	0
	Average	59.36	24.62	21.08	0.09	0	0
AA04 (Chamkuna Village)	**Maximum**	97.92	43.21	32.72	0	0	0
	Minimum	35.99	14.41	11.67	0	0	0

	Average	55.82	22.9	18.17	0	0	0
AA05 (Toorsa Tar Village)	**Maximum**	131.52	46.77	42.61	1.28	0	0
	Minimum	19.79	3.67	0.72	0	0	0
	Average	59.8	23.74	20.94	0.24	0	0
AA06 (Near Rigsar's Batching Plant)	**Maximum**	137.22	52.24	51.9	1.38	0	0
	Minimum	31.30	13.16	9.63	0	0	0
	Average	71.39	26.71	26.62	0.47	0	0

Mitigation Measures

Although difficult, the project in its capacity has been continuously monitoring and ensuring strict compliance on this issue, some of which is described as follows:

- Deployment of sprinkler truck and speed bumps initiated by the contractors. However, due to external activities simultaneously occurring within the project vicinity, the project corridors are covered in dust causing continuous exposure of duct to workers.

- Recommendation to provide N95 nasal masks or equivalent mask, and eye protection gear to all workers as a preventive measure.

- Site Inspectors to ensure that all workers use the provided gears while at the site.

- Construction materials at the site or being transported by truck are well covered with tarpaulin.

- Use of Bulkers in place of cement bags for Batching plant, which is currently being supplied by Dungsam Cement Corporation Limited (DCCL)

- Dust suppression measures such as temporary Speed bumps have been built along the project area and cautionary signage (speed limit) have been erected along the project area to reduce the speed of huge trucks and commuters.

- A traffic survey is also conducted every month by the contractors to study the number of times the project vehicles are using the highway in comparison to third-party vehicles. This study is conducted to ensure that project vehicles are not a major contributor to pollution.

- Contracts are also ensuring that all construction materials at the site are covered in tarpaulin.

Noise

Noise quality monitoring is conducted every day over a period of 24 hours by Ecolab in six locations. The test is conducted once during the day and the other at night time. Noise test is conducted to ensure that the sound generated is not only produced from project activities but from natural factors as well as other undertakings occurring in the vicinity. The test is also to ensure that the noise generated from the project area is temporary and will not have any lasting impact after its completion. Once the noise data has been gathered any mitigation measures which need to be taken care are immediately and strictly implemented.

For the months of July 2019 all five locations NL01 – NL05 both during the day and night were found within the permissible limits. NL06 was the only location for both day and night which was above the permissible limits.

For the month of August all five locations NL01 – NL05 both during the day and night were found within the permissible limits. NL06 was the only location for both day and night which was above the permissible limits.
For the month of September three locations NL03 – NL05 both during the day and night were within the permissible limit. NL01 and NL02 were above the permissible limits during the day and within the permissible limits during the night. Location NL06 was above the permissible limits both during the day and night.

There are multiple external factors that are contributing towards the high level of noise pollution at the three locations (NL01, NL02 & NL06) along with the PTDP project site:

- Firstly both the locations NL01 and NL02 are away from the main PTDP project site. So high level of noise indicated are not due to the PTDP project, but rather caused by other external factors and activities ongoing along the two locations. One of the major factors is the problem of vehicle congestion which has exacerbated over the past few months due to developments happening all around Phuentsholing town.

- Other factors include the multiple ongoing projects happening along the two locations, construction activities such as drilling, and movement of heavy vehicles carrying construction materials, are all contributors towards the high level of noise pollution in these two locations. The noise generated during the testing are not permanent, and will not have any future impact

- Over the last months, the project has seen a growing number of trucks parked along the Phuentsholing-Samtse highway. This is not only causing air pollution due to emission from vehicles, but congestion for daily commuters leading to constant honking, and running engines all contributing towards the rise in noise level in the vicinity.

- There are also many workshops located along the highway and noise from the use of equipment are another contributor to the high level of noise in the vicinity.

- Also dredging work by Rigsar and Yangkhil has resumed in full swing as they have been asked to move from the PTDP location by the end of October 2019. Noise from use of heavy machinery and constant movement of heavy vehicles with gravel and boulders are all contributors towards the rise in noise especially in location NL06.

- Since the construction of the guide wall has moved closer to the NL06 station, noise from machines like the pneumatic boring machine, to demolish the guide walls, and rigs are all contributors towards high noise. Work which requires the use of heavy and loud machines are only allowed to function until regular working hours.

Noise data from July – September

Location		NL01	NL02	NL03	NL04	NL05	NL06
JULY	**DAY**	53.7	57.9	51.82	56.2	52.87	79.7
	NIGHT	23.8	39.2	29.3	25.7	39.6	69.1
AUGUST	**DAY**	64.5	63.7	31.2	47.3	50.1	69.7
	NIGHT	51.7	49.8	45.8	28.6	42.8	64.1
SEPTEMBER	**DAY**	67.6	69.8	60.6	45.9	51.7	72.7
	NIGHT	48.1	41.2	43.2	37.3	43.8	66.2

AVERAGE	**DAY**	**61.93**	**63.8**	**47.87**	**49.8**	**51.55**	**74.03**
	NIGHT	**41.2**	**43.4**	**39.43333**	**30.53333**	**42.06667**	**66.46667**

Mitigation Measures

There are many external factors contributing to the rise in noise pollution which cannot be controlled, but sounds generated from the PTDP project activities are monitored and controlled. Contractors are advised to complete all work which requires the use of heavy machinery, which could generate loud noise during normal working hours. Contractors are also informed to ensure that all workers living in the camps do not create too much noise which could disturb the neighboring households. All project drivers are also prohibited from unnecessarily honking in the vicinity.

All workers at the site have been informed and encouraged to wear suitable gears and wear their earplugs at all times or while functioning machines which generate loud noise.

Surface Water Quality

The surface water test is conducted to ensure that the project does not pollute and impact the Amochhu River. Ten locations (SW01-SW10) have been identified to conduct the water quality test. Out of the ten locations, a monthly test is conducted for SW04 & SW05 which are points right above and below the project camp area. This is to monitor and ensure that any camp or project activities are not contributing towards any form of pollution along that stretch of the river. Whereas a pre and post-monsoon water quality test encompassing SW01-SW10 are conducted every six months.

The surface water test was conducted for SW04 & SW05 for the months of July and August 2019, and for the month of September surface water test from SW01 to SW10 was conducted. The data for the month of July and August reflects that all parameters are within the permissible limits except the TSS and dissolved Oxygen which is slightly above the permissible limits.

The surface water test for SW01 – SW10 was conducted from the 20th – 21st September 2019. The only parameters detected above the permissible limits were TSS and Dissolved Oxygen (DO). TSS above the permissible limits were detected in SW01, SW02, SW05, SW06, SW07, SW08, SW09 andSW10. TSS for SW03 was within the permissible limit. Dissolved Oxygen above the permissible limits was detected for all nine locations fromSW01 to SW10, except for SW05. DO for SW05 was within the permissible limits. Apart from TSS and DO being above the permissible limit, the remaining parameters for surface water for all three months were within the permissible limits.

One of the main causes for high TSS for the last three months is due to the heavy rainfall, there was an increase in the river turbidity, which increased siltation and sedimentation in the river. Other factors such as disposal of materials from construction sites along the Omchhu, and industrial waste (from Karma steel) and settlements along the Omchhu are all factors contributing towards high TSS.

The data for surface water for all three months also indicated high Dissolved Oxygen. Dissolved Oxygen concentration in a freshwater system like the Omchhu and Amochhu river will vary depending on the season, location and water depth. Due to Phuentsholing town's geographical location at a lower altitude, the rivers are able to hold more dissolved oxygen in comparison to a higher altitude. In addition to the change in climate, heavy rainfall causing an influx of storm water, which leads to an increase in the water level and decrease in the water temperature are all contributors towards a higher DO.

Surface Water Quality Data For SW04 & SW05 from July – September

Sl. no.	Parameter	Unit	Ambient Water Quality Standards as per NEC			IFC standards	JULY		AUGUST		SEPTEMBER	
			A (Very Good)	B (Good)	C (Moderate)		SW04	SW05	SW04	SW05	SW04	SW05
1	pH		6.5-8.5	9-Jun	9-Jun	9-Jun	7.34	7.53	8.01	8.09	7.43	7.83
2	Conductivity	µs/cm	800	1000	2000	-	109	78	192.4	118	198	287
3	Total Dissolved Solid	mg/L	-	-	-	-	91	74	62	59	102.5	144
4	Temperature		-	-	-	-	19.9	19.6	18.7	18.8	24.3	25.5
5	Biochemical Oxygen Demand (BOD) at 27˚ C	mg/L	2	5	50	30	3.81	2.088	2.983	3.86	3.702	7.903
6	Chemical Oxygen Demand (COD)	mg/l	-	-	-	125	6.072	6.053	5.849	6.217	16.031	17.97
7	TSS	mg/l	25	100	-	50	471	496.7	126.9	116.67	231.301	217.5
9	Dissolved oxygen	mg/l	6	4	-	-	82.6	87.9	16.8	13.54	14.8	4.71
10	Salinity	mg/l	-	-	-	-	0.48	22.6	0.48	0.05	0.51	0.32
11	Phenol	mg/l	0.001	0.002	-	-	BDL	BDL	BDL	BDL	BDL	BDL
12	Sulphate	mg/l	25	100	-	-	1.962	0.945	1.081	2.087	4.085	7.043
13	Nitrate	mg/l	10	50	-	-	3.701	10.74	2.714	6.421	7.005	11.021
14	Fluoride	mg/l	1	2	-	-	BDL	BDL	BDL	BDL	BDL	BDL
15	SAR	Miliequa./L	-	-	26	-	0.203	0.841	0.973	0.428	0.417	0.521
16	Ammonical Nitrogen	mg/l	-	-	-	-	BDL	BDL	BDL	BDL	BDL	BDL
17	Magnesium	mg/l	-	-	-	-	0.972	0.52	0.605	0.918	0.058	0.0712
18	Sodium	mg/l	-	-	-	-	12.08	6.81	8.636	4.86	23.092	6.552
19	Potassium	mg/l	-	-	-	-	0.86	2.001	2.71	3.75	1.093	3.004
20	Chloride	mg/l				-	7.27	5.71	4.32	6.072	9.017	4.061
21	Cyanide	mg/l	0.05	0.05	-	-	BDL	BDL	BDL	BDL	BDL	BDL

22	**Lead**	**mg/l**	0.002	0.02	-	-	BDL	BDL	BDL	BDL	BDL	BDL
23	**Total Coliform**	**MPN/100ml**	50	5000	10000	400	25	16	27	27	17	31
24	**Fecal coliform**	**MPN/100ml**	20	2000	5000	-	19	27	11	16	26	26
25	**Odour**	**-**	unobjectionable	unobjectionable	-	-	unobjectionable	unobjectionable	unobjectionable	unobjectionable	unobjectionable	unobjectionable
26	**Mineral Oil**	**-**	No Film	No Film	-	-	No Film	No Film	No Film	No Film	No Film	No Film

Table 6: Surface Water Quality Dara For SW01 – SW10 For September

SL. No.	Parameter	Unit	Ambient Water Quality Standards as per NEC			IFC standards	Surface Water Quality									
			A (Very Good)	B (Good)	C (Moderate)		SW01	SW02	SW03	SW04	SW05	SW06	SW07	SW08	SW09	SW10
1	**pH**		6.5-8.5	9-Jun	9-Jun	9-Jun	7.32	7.98	8.34	7.43	7.83	8.73	7.85	7.21	7.55	7.57
2	**Conductivity**	**µs/cm**	800	1000	2000	-	134.9	209.12	950	198	287	321	214	221.4	432	187.5
3	**Total Dissolved Solid**	**mg/L**	-	-	-	-	142	124.7	475	102.5	144	128.6	108	121	218	96
4	**Temperature**		-	-	-	-	21.6	23.5	25.41	24.3	25.5	24.6	22.29	21.04	25.03	22.7
5	**Biochemical Oxygen Demand (BOD) at 27° C**	**mg/L**	2	5	50	30	6.732	2.087	6.32	3.702	7.903	8.32	2.983	3.342	9.071	1.097
6	**Chemical Oxygen Demand (COD)**	**mg/l**	-	-	-	125	12.046	8.039	13.071	16.031	17.97	21.76	5.849	7.109	19.054	3.821
7	**TSS**	**mg/l**	25	100	-	50	210.1	237.01	67.05	231.301	217.5	132.3	126.9	126.9	167.09	113.52
8	**Dissolved oxygen**	**mg/l**	6	4	-	-	19.7	16.9	9.89	14.8	4.71	5.025	5.18	5.68	6.5	18.5

9	**Salinity**	**mg/l**	-	-	-	-	0.23	0.47	0.48	0.51	0.32	0.74	0.43	0.21	0.21	0.13
10	**Phenol**	**mg/l**	0.001	0.002	-	-	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
11	**Sulphate**	**mg/l**	25	100	-	-	2.012	2.273	0.765	4.085	7.043	5.072	0.0591	1.542	3.057	BDL
12	**Nitrate**	**mg/l**	10	50	-	-	0.087	0.936	4.091	7.005	11.021	3.071	4.094	3.088	21.055	4.077
13	**Fluoride**	**mg/l**	1	2	-	-	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14	**SAR**	**Milieq ua./L**	-	-	26	-	0.019	0.051	0.764	0.417	0.521	0.086	0.037	0.429	0.32	0.21
15	**Ammonical Nitrogen**	**mg/l**	-	-	-	-	0.003	BDL	BDL	BDL	BDL	0.023	BDL	BDL	0.037	BDL
16	**Magnesium**	**mg/l**	-	-	-	-	0.825	0.084	0.54	0.058	0.0712	BDL	0.0729	0.019	BDL	BDL
17	**Sodium**	**mg/l**	-	-	-	-	3.021	7.201	12.56	23.092	6.552	16.091	5.077	4.105	12.82	3.046
18	**Potassium**	**mg/l**	-	-	-	-	0.543	3.019	3.011	1.093	3.004	3.552	0.853	2.007	6.75	0.738
19	**Chloride**	**mg/l**				-	0.769	0.027	0.743	9.017	4.061	3.099	0.0072	BDL	5.723	1.73
20	**Cyanide**	**mg/l**	0.05	0.05	-	-	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21	**Lead**	**mg/l**	0.002	0.02	-	-	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
22	**Total Coliform**	**MPN/100ml**	50	5000	10000	400	27	64	32	17	31	38	BDL	13	54	8
23	**Fecal coliform**	**MPN/100ml**	20	2000	5000	-	23	36	9	26	26	27	9	BDL	31	12
24	**Odour**		unobjectionable	unobjectionable	-	-	unobjectionable	unobjectionable	unobjectionable	unobjectionable	unobjectionable	unobjectionable	unobjectionable	unobjectionable	unobjectionable	unobjectionable
25	**Mineral Oil**		No Film	No Film	-	-	No Film	No Film	No Film	No Film	No Film	No Film	No Film	No Film	No Film	No Film

Mitigation Measures

Since the cause of high TSS and DO are due to external and natural factors, the PTDP can only ensure that our project and camp activities are not contributing towards the pollution. This can be achieved by ensuring that camp or project sites are:

- Properly collecting and disposing of all waste
- No dumping of construction materials along the riverbed or in the river
- Ensure that all construction materials are well covered
- Ensure that all restrooms in the project and campsites are well maintained so that workers are discouraged from defecating around the project vicinity or near the river
- Making sure to service the septic system at the project site and camps
- Landscaping the project office and camps with native plants

Meteorology

The metrological station was installed in March 2019. The average meteorological reading for the month of July – September are as follows:

Meteorological data for July 2019

Parameters	Rainfall (mm)	Relative Humidity (g/m^3)	Temperature (Degree Celsius)	Wind Speed (km/h)
Average readings	83.07	81.48	34.6	2.6
Minimum	BDL	55.5	25	0
Maximum	407	95.5	28.2	12.6

Meteorological data for August 2019

Parameters	Rainfall (mm)	Relative Humidity (g/m^3)	Temperature (Degree Celsius)	Wind Speed (km/h)
Average readings	27.3	75.13	30.9	5.56
Minimum	BDL	95.2	25	22.9
Maximum	BDL	42	40.3	-

Meteorological data for September 2019

Parameters	Rainfall (mm)	Relative Humidity (g/m^3)	Temperature (Degree Celsius)	Wind Speed (km/h)
Average readings	25.4	-	27.89	-
Minimum	BDL	52.2	23	0.5
Maximum	97.5	95.5	37.4	23.7

Water regime

The first Water Regime monitoring was conducted on 1st April 2019. Since then, pictures of the river has been taken by the contractors twice every week. This monitoring is being conducted, so that the project can record the change in waterways and water level, and examine and analyse the information to ensure that the project will not be impacted.

Below are images of the most drastic change in waterways for the month of July – September. Due to the heavy rainfall experienced in during the monsoon season, the waterways have definitely changed but not

drastically. The river has diverted its course and has become wider which means it is closer to the river banks.

Water Level Monitoring

The first water level monitoring was conducted on 4th May 2019. Since then, the monitoring is carried out twice every week (Mondays and Saturdays) between part 5 & 6, where construction activities are currently ongoing. This monitoring is conducted to monitor the increase and decrease in the Amochhu water level. This monitoring is also another way to foresee any warning signs of flooding in the project area.

For the month of July, there was an average change of 0.8645m in the river level since the initial measurement, taken on 1st July 2019.

For the month of August, there was an average change of water level of 2.17m since the initial measurement taken on 6th August.

For the month of September, an average water level change of 0.536m was noted since the initial measurement on 3rd September.

Due to the heavy rainfall, the river is also changing its course and instead of the water level increasing drastically, the river is becoming wider.

Ground contamination

To prevent ground contamination while using oil and grease, a tray container is used to prevent ground contamination in addition to the already cemented floor in the workshop. Although the contractors are taking measures to ensure no ground contamination occurs by using tray containers to store unsealed barrels of oil and grease, there were several spots around the project sites where there was leakage of oil and grease in the ground. This could be from vehicles, spillage during movement of barrels or from overflowing of the tray containers.

Several strategies for remediation are:

- The encapsulation process to ensure that contaminants do not spread any further.
- Thermal soil process is by baking the contaminated soil so contaminants evaporate and then disposing of the soil.
- Excavate soil and take it to a disposal site away from ready pathways for human or sensitive ecosystem contact.
- Containment of the soil contaminants such as capping or paving over in place

Solid Waste Management

Colour-coded bins have been installed in the project and campsites. Blue for degradable and Green for biodegradable waste. The Phuentsholing Thromde Municipality makes a bi-weekly trip to collect waste from the project site. A monthly record is maintained by the contractors to understand the amount of waste generated.

Month	Degradable	Bio-Degradable
July	1.8 metric ton	1.6 metric ton
August	1.76 metric ton	1.7 metric ton
September	1.81 metric ton	1.7 metric ton

Ecological Study

The ecological study comprises of two components: Aquatic and Terrestrial survey. The study was proposed to be carried out every quarterly as per the CEMP. However, after the ADB mission visit on May 2019, the study was agreed to be carried out bi-annually with each study covering all 4 seasons. The study is being outsourced by AFONs to Ms. Ecolab Services.

The study is being conducted to comprehend the diversity of species (both aquatic and terrestrial) in the PTDP project area. For the month of July and August no Ecology survey was submitted. On 16th September 2019, a Terrestrial walkthrough was conducted by CW01 with representative from PIU. The next Terrestrial study will be submitted in the month of November along with the EMR.CW01 plans to conduct the 2nd Aquatic study in the month of October for which an approval is required from DoFPS.

PTDP will constantly monitor the aquatic and terrestrial ecology of the areas in and around the project site.

Appendix 10: Health and safety monitoring for 4th Quarter (July – September 2019)

Sl. No.	Monitoring activities	Refer Legend for appropriate marking	
A. OVERALL CONSTRUCTION SITES			
1	Equipment/ Machines in Proper condition and safe	0	Yes
2	First Aid and Medical facilities	0	Yes
3	Any Community / Social Concerns	0	No
4	No encroachment into the farm land/ Settlement	0	No
B. WORK STANDARDS			
1	General work area clean and tidy	0	Yes
2	Radio communications (emergency & general), call-up procedures adequate	0	Yes
3	Signage (PPE, safety & restricted access) visible, legible, good condition	0	Yes
4	Adequate signage at workshop yard entrance (e.g. Danger – Deep Excavation, Hazardous & Flammable materials, pressurized gasses, etc)	0	Yes
C. WORK ENVIRONMENT			
1	Stockpiles & materials stacked and maintained in a safe condition	0	Yes
2	Adequate lighting on-site, covered storage areas, vehicle maintenance pit	0	Yes
3	Segregated work areas and signage adequate (direction, warnings)	0	Yes
4	Dust control measures adequate (water truck & sprinklers, if necessary)	0	Checklist of sprinkler truck deployment is maintained by the driver and submitted with EMR every month
D. HAZARDOUS SUBSTANCES OR DANGEROUS GOODS			
1	Fuel storage tank within sealed area & bonded (inside wall in case of a spill)	0	Sealed tanks are well stored, and unsealed tanks have trays or tarpaulin below
2	Workers exposed to hazardous substances trained, adequate instruction provided	0	Yes
3	Health/ Safety surveillance is undertaken where appropriate	0	Yes
4	Material safety data sheet available for hazardous substances		Yes
E. TOILETS AND KITCHEN			
1	Offices, Toilets, and washrooms maintained in a sanitary condition	0	
2	Toilets, Septic Tanks and Soak Pits being used properly and cleaned regularly	0	Yes. Tanks and soak pits at the workers camp and project office is being cleaned every month. Tanks at the project sites are being cleaned every week.
3	Properly labelled garbage bins installed around the kitchen & other areas and emptied regularly	0	Yes
4	Is the garbage in good management and disposed to the Thromde collection system?	0	6 trips of solid waste trucks are completed by the Phuentsholing Thromde
5	Soak pits are proper, covered, with no overflow?	0	No overflow
6	Kitchen sewage/waste disposed of in infiltration pits, with ACF, closed system?	0	6 trips of the solid waste truck and 3 trips of sewage sludge are

Sl. No.	Monitoring activities	Refer Legend for appropriate marking	
			made by Phuentsholing Thromde
7	Adequate water supply for washbasin & flush toilets?	0	Yes. Water tankers at project sites are refilled every morning and as and when needed.
F. DUST & SMOKE			
1	No visible dust clouds from excavation/levelling activity.	0	No
2	No burning of wastes	0	Not at the project site, but there was burning of tires near NHDCL colony from a workshop
3	Waste bins facilities are available at the site	0	Blue- Degradable and Green- Non-degradable
G. GENERAL HEALTH AND SAFETY DURING CONSTRUCTION			
1	All workers trained in safety and hygiene at work? (Records)	0	Yes
2	Site supervisors/ safety officer gives weekly toolbox talks to reinforce training to all the labourers?	0	Total of 26 toolbox talks conducted this month
3	Equipment (backhoe etc.), machines, and vehicles are in proper condition with details of registration- emission certificate/ fitness certificates.	0	Yes
4	Workers equipped with PPE such as hard hats, eye and protection, ear protection, gloves, safety- shoes, and respirators	0	Contractors are handing out violation slips to workers who refuse to comply
5	High visibility clothing, including a vest to avoid “collision” in work area	0	Yes
6	Warning signs in place to shield workers from passing vehicle and segregation such as traffic cone and barrels	0	Yes
7	Fencing/ Markers installed on all areas such as excavation, concreting, and side of temporary work/pits greater than 1m deep	0	Yes
8	Information for workers and adequate awareness working near construction vehicles & equipment the operator/ driver knows where the persons are located?	0	Yes
9	Communicate with the driver using a radio, hand signals, etc.	0	Yes
10	Reversing siren, whistle, air-horn on vehicles or another device to warn fellow workers when they are in danger.	0	The alarm has been installed and a mock drill was conducted at the site on 27th June.
11	Flagmen in place with flags and radio fully equipped and completed training?	0	Yes
12	Proper Traffic Management Plan is available and adhered to	0	Yes. Traffic survey is being conducted.
13	Training and awareness meetings for HIV/AIDs (STI) including the prohibition of drugs/alcohol on construction site.	0	Conducted from 21-23rd March. Next HIV training to be conducted in October.
14	First aid boxes are available and well stocked with bandages, antiseptic, etc. First Aid Register is available	0	Yes
15	Employee register with gender, nationality, skills maintained at the site	0	Yes
16	Visitor Card, Register, Briefing, and Management System adopted	0	Yes
H. ACCOMMODATION REQUIREMENTS			
1	Domestic animals controlled to avoid nuisance?	0	Yes. All construction materials are barricaded and well covered
2	Information board to employees/method notification in the campsite?	0	Yes
Sl. No.	**Monitoring activities**	**Refer Legend for appropriate marking**	

Sl. No.	Monitoring activities	Refer Legend for appropriate marking	
A. OVERALL CONSTRUCTION SITES			
1	Equipment/ Machines in Proper condition and safe	0	Yes
2	First Aid and Medical facilities	0	Yes
3	Any Community / Social Concerns	0	No
4	No encroachment into the farm land/ Settlement	0	No
B. WORK STANDARDS			
1	General work area clean and tidy	0	Yes
2	Radio communications (emergency & general), call-up procedures adequate	0	Yes
3	Signage (PPE, safety & restricted access) visible, legible, good condition	0	Yes
4	Adequate signage at workshop yard entrance (e.g. Danger – Deep Excavation, Hazardous & Flammable materials, pressurized gasses, etc)	0	Yes
C. WORK ENVIRONMENT			
1	Stockpiles & materials stacked and maintained in a safe condition	0	Yes
2	Adequate lighting on-site, covered storage areas, vehicle maintenance pit	0	Yes
3	Segregated work areas and signage adequate (direction, warnings)	0	Yes
4	Dust control measures adequate (water truck & sprinklers, if necessary)	0	Checklist of sprinkler truck deployment is maintained by the driver
D. HAZARDOUS SUBSTANCES OR DANGEROUS GOODS			
1	Fuel storage tank within sealed area & bonded (inside wall in case of a spill)	0	Sealed tanks are well stored, and unsealed tanks have trays or tarpaulin below
2	Workers exposed to hazardous substances trained, adequate instruction provided	0	Yes
3	Health/ Safety surveillance is undertaken where appropriate	0	Yes
4	Material safety data sheet available for hazardous substances		Yes
E. TOILETS AND KITCHEN			
1	Offices, Toilets, and washrooms maintained in a sanitary condition	0	Women's restrooms are installed with a waste bin for disposal of sanitary pads.
2	Toilets, Septic Tanks and Soak Pits being used properly and cleaned regularly	0	Yes. Tanks and soak pits at the workers camp and project office is being cleaned every month. Tanks at the project sites are being cleaned every week.
3	Properly labelled garbage bins installed around the kitchen & other areas and emptied regularly	0	Yes
4	Is the garbage in good management and disposed to the Thromde collection system?	0	Approx 1.79 Metric tons of dry waste was generated. 6 trips of solid waste trucks was completed by the Phuentsholing Thromde
5	Soak pits are proper, covered, with no overflow?	0	No overflow
6	Kitchen sewage/waste disposed of in infiltration pits, with ACF, closed system?	0	Approx1.83 Metric tons of degradable waste was generated. 6 trips of the solid waste truck and 3 trips of sewage sludge was made by Phuentsholing Thromde
7	Adequate water supply for washbasin & flush toilets?	0	Yes. Water tankers at project sites are refilled every morning and as and when needed.
F. DUST & SMOKE			

Sl. No.	Monitoring activities	Refer Legend for appropriate marking	
1	No visible dust clouds from excavation/levelling activity.	0	No
2	No burning of wastes	0	Not at the project site, but there was burning of tires near NHDCL colony from a workshop
3	Waste bins facilities are available at the site	0	Blue- Degradable and Green- Non-degradable
G. GENERAL HEALTH AND SAFETY DURING CONSTRUCTION			
1	All workers trained in safety and hygiene at work? (Records)	0	Yes
2	Site supervisors/ safety officer gives weekly toolbox talks to reinforce training to all the labourers?	0	Total of 26 toolbox talks conducted this month
3	Equipment (backhoe etc.), machines, and vehicles are in proper condition with details of registration- emission certificate/ fitness certificates.	0	Yes
4	Workers equipped with PPE such as hard hats, eye and protection, ear protection, gloves, safety- shoes, and respirators	0	Contractors are handing out violation slips to workers who refuse to comply
5	High visibility clothing, including a vest to avoid “collision” in work area	0	Yes
6	Warning signs in place to shield workers from passing vehicle and segregation such as traffic cone and barrels	0	Yes
7	Fencing/ Markers installed on all areas such as excavation, concreting, and side of temporary work/pits greater than 1m deep	0	Yes
8	Information for workers and adequate awareness working near construction vehicles & equipment the operator/ driver knows where the persons are located?	0	Yes
9	Communicate with the driver using a radio, hand signals, etc.	0	Yes
10	Reversing siren, whistle, air-horn on vehicles or another device to warn fellow workers when they are in danger.	0	The alarm has been installed and a mock drill was conducted at the site on 27th June.
11	Flagmen in place with flags and radio fully equipped and completed training?	0	Yes
12	Proper Traffic Management Plan is available and adhered to	0	Yes. Traffic survey is being conducted.
13	Training and awareness meetings for HIV/AIDs (STI) including the prohibition of drugs/alcohol on construction site.	0	Conducted from 21-23rd March
14	First aid boxes are available and well stocked with bandages, antiseptic, etc. First Aid Register is available	0	Yes
15	Employee register with gender, nationality, skills maintained at the site	0	Yes
16	Visitor Card, Register, Briefing, and Management System adopted	0	Yes
H. ACCOMMODATION REQUIREMENTS			
1	Domestic animals controlled to avoid nuisance?	0	Yes. All construction materials are barricaded and well covered
2	Information board to employees/method notification in the campsite?	0	Yes

Legend: 0– No significant concern; √ Environmental or Safety concern, action to be taken. Non-Conformance or Photo was taken: yes ☑ no☒

Appendix 11: Compliance with Loan and Grant Covenants

Reference Section	Covenant	Status of Compliance
Project agreement CDCL		
Section 2.04	CDCL shall carry out the Project in accordance with plans, design standards, specifications, work schedules and construction methods acceptable to ADB. CDCL shall furnish, or cause to be furnished, to ADB, promptly after their preparation, such plans, design standards, specifications and work schedules, and any material modifications subsequently made therein, in such detail as ADB shall reasonably request.	Being complied with
Section 2.08.	(a) CDCL shall (i) provide its annual financial statements prepared in accordance with financing reporting standards acceptable to ADB; (ii) have its financial statements audited annually by independent auditors whose qualifications, experience and terms of reference are acceptable to ADB, in accordance with auditing standards acceptable to ADB; (iii) as part of each such audit, have the auditors prepare the auditors' opinion(s) on the financial statements; and (iv) furnish to ADB, no later than 1 month after approval by the relevant authority, copies of such audited financial statements and auditors' opinion(s), all in the English language, and such other information concerning these documents and the audit thereof as ADB shall from time to time reasonably request.	To be completed within Q3 & Q4 2019. Submission due December end. 2019.
Section 2.14.	CDCL shall promptly notify ADB of any proposal to amend, suspend or repeal any provision of its constitutional documents, which, if implemented, could adversely affect the carrying out of the Project or the operation of the Project facilities. CDCL shall afford ADB an adequate opportunity to comment on such a proposal prior to taking any affirmative action thereon.	Being complied with
Section 2.15.	Within 6 months after the Effectiveness Date, CDCL shall create a Project website to disclose information about various matters on the Project, including procurement. With regard to procurement, the website shall include information on the list of participating bidders, name of the winning bidder, basic details on bidding procedures adopted, amount of contract awarded, the list of goods/services procured, and the process for handling complaints related to contracts and procurement.	Being complied with
Project agreement DHI		
Section 2.04.	(a) DHI shall furnish to ADB all such reports and information as ADB shall reasonably request concerning (i) the Financings and the expenditure of the proceeds thereof; (ii) the items of expenditure financed out of such proceeds; (iii) the Project; (iv) the administration, operations and financial condition of DHI; and (v) any other matters relating to the purposes of the Financings. (b) Without limiting the generality of the foregoing, DHI shall furnish to ADB periodic reports on the execution of the Project and on the operation and management of the Project facilities. Such reports shall include updates on implementation of the SAP. Such reports shall be submitted in such form and in such detail and within such a period as ADB shall reasonably request, and shall indicate, among other things, progress made and problems encountered during the period under review, steps taken or proposed to be taken to remedy these problems, and proposed program of activities and expected progress during the following period.	Being complied with
Section 2.05	(a) DHI shall (i) maintain separate accounts and records for the Project; (ii) prepare annual financial statements for the Project in accordance with financial reporting standards acceptable to ADB; (iii) have such financial statements audited annually by independent auditors whose qualifications, experience and terms of reference are acceptable to ADB, in accordance with auditing standards acceptable to ADB; (iv) as part of each such audit, have the auditors prepare a report, which includes the auditors' opinion(s) on the financial statements and the use of the Financings proceeds, and a management letter (which sets out the deficiencies in the internal control of the Project that were identified in the course of the audit, if any); and (v) furnish to ADB, no later than 6 months after the close of the fiscal year to which they relate, copies of such audited financial statements, audit report and management letter, all in the English language, and such other information	Being complied with

	concerning these documents and the audit thereof as ADB shall from time to time reasonably request. (b) ADB shall disclose the annual audited financial statements for the Project and the opinion of the auditors on the financial statements within 14 days of the date of ADB's confirmation of their acceptability by posting them on ADB's website. (c) In addition to annual audited financial statements referred to in section (a) hereinabove, DHI shall (i) provide its annual financial statements prepared in accordance with financing reporting standards acceptable to ADB; (ii) have its financial statements audited annually by independent auditors whose qualifications, experience and terms of reference are acceptable to ADB, in accordance with auditing standards acceptable to ADB; (iii) as part of each such audit, have the auditors prepare the auditors' opinion(s) on the financial statements; and (iv) furnish to ADB, no later than 1 month after approval by the relevant authority, copies of such audited financial statements and auditors' opinion(s), all in the English language, and such other information concerning these documents and the audit thereof as ADB shall from time to time reasonably request. (d) DHI shall enable ADB, upon ADB's request, to discuss the financial statements for the Project and DHI and its financial affairs where they relate to the Project with the auditors appointed by DHI pursuant to subsections (a)(iii) and (c)(i) hereinabove, and shall authorize and require any representative of such auditors to participate in any such discussions requested by ADB. This is provided that such discussions shall be conducted only in the presence of an authorized officer of DHI unless DHI shall otherwise agree.	
Loan Agreement		
Section 3.01(b)	Loan to be applied exclusively to the financing of expenditures on the Project in accordance with the provisions of this Loan Agreement and the Project Agreement.	Being complied with
Section 3.03	The Borrower shall procure, or cause to be procured, the items of expenditure to be financed out of the proceeds of the Loan in accordance with the provisions of Schedule 4 to this Loan Agreement.	Being complied with
Section 4.03	The Borrower shall take all actions which shall be necessary on its part to enable DHI and CDCL to perform their respective obligations under the Project Agreements, and shall not take or permit any action which would interfere with the performance of such obligations.	Being complied with
Schedule 4, para. 2	Works shall be procured and Consulting Services shall be selected and engaged only on the basis of the procurement methods and the selection methods set forth below. These methods are subject to, among other things, the detailed arrangements and threshold values set forth in the Procurement Plan. The Borrower may only modify the procurement methods and the selection methods or threshold values with the prior agreement of ADB, and modifications must be set out in updates to the Procurement Plan.	Being complied with
Schedule 4, para. 5	DHI shall not award any Works contract which involves environmental impacts until: (a) The Borrower's National Environment Commission has granted the final approval of the EIA; and (b) DHI has incorporated the relevant provisions from the EMP into the Works contract.	Being complied with a) Being complied with, NEC approved the EIA b) C-EMP for CW-01 approved end January 2019.
Schedule 4, para. 10	Contracts procured under international competitive bidding procedures and contracts for Consulting Services shall be subject to prior review by ADB unless otherwise agreed between the Borrower and ADB and set forth in the Procurement Plan.	Being complied with
Schedule 5, para. 1	The Borrower, DHI and CDCL shall ensure that the Project is implemented in accordance with the detailed arrangements set forth in the PAM. Any subsequent change to the PAM shall become effective only after approval of such change by the Borrower and ADB. In the event of any discrepancy between the PAM and this Loan Agreement, the provisions of this Loan Agreement shall prevail.	Being complied with
Schedule 5, para. 2	The Borrower shall ensure that DHI and CDCL employ sufficient staff for the PMU and PIU for the duration of the project, with adequate and relevant expertise in the field of project management, financial management, engineering, procurement, and environmental and social safeguards implementation. The PMU Project Director and PIU Project Manager shall hold the position not less	Being complied with

	than the rank of Class 1 engineer, or equivalent, Officers, unless otherwise acceptable to ADB.	
Schedule 5, para. 3	The Borrower, DHI and CDCL shall (a) ensure that the majority of counterpart staff assigned to the PMU and PIU are assigned to the Project on a full-time basis; and (b) undertake best efforts to ensure that they remain in their positions for a reasonable period of time, and that staff replacements do not unduly disrupt implementation of the Project. The Borrower, DHI and CDCL shall provide ADB reasonable opportunity to comment on any proposed appointment of persons to key positions in the PMU and PIU, including the Project Director for the PMU and the Project Directors for PIU.	Being complied with
Schedule 5, para. 4	The Borrower shall cause DHI and CDCL to give full, timely and efficient cooperation in issuing any licenses, permits or approvals required in connection with infrastructure work. The Borrower shall also ensure that Bhutan Power Corporation and Bhutan Telecom will provide the necessary connections in the developed areas.	Being complied with for CW-01 works To be complied with at end of the construction stage
Schedule 5, para. 5	Within 36 months of the Effective Date, the Borrower through DHI shall develop and finalize, and ensure approval by the relevant government agency and implementation of, the SAP, which shall include, among other matters: (i) the required legal, policy and operational frameworks for operation of the new township that will establish institutional arrangements for sustainable township management, including the required approval process, and the allocation of roles and responsibilities between the municipality and CDCL; (ii) the allocation of sufficient municipal and CDCL human resources; (iii) a plan on the development of the surrounding area adjacent to the newly developed township, including plans for raising grounds level for the protection for surface flooding; and (iv) a time-bound plan for the operation and maintenance of the newly developed township.	To be complied with for 2021 Q2
Schedule 5, para. 6 (Environment)	The Borrower shall ensure or cause DHI and CDCL to ensure that the preparation, design, construction, implementation, operation and decommissioning of the Project and all Project facilities comply with (a) all applicable laws and regulations of the Recipient relating to environment, health and safety; (b) the Environmental Safeguards; and (c) all measures and requirements set forth in the EIA and the EMP, and any corrective or preventative actions set forth in a Safeguards Monitoring Report.	Being complied with
Schedule 5, paras. 7 and 8 (Land Acquisition and Involuntary Resettlement)	The Borrower shall ensure that all land and all rights-of-way required for the Project are made available to the Works contractor in accordance with the schedule agreed under the related Works contract. The Borrower shall ensure that the Project does not involve any involuntary resettlement impacts within the meaning of the SPS. In the event the Project involves any such impacts, the Borrower shall take all steps required to ensure that the Project complies with the applicable laws and regulations of the Borrower and with the SPS.	Being complied with
Schedule 5, para. 9 (Indigenous Peoples)	The Borrower shall ensure that the Project does not involve any indigenous peoples' impacts within the meaning of the SPS. In the event the Project involves any such impacts, the Borrower shall take all steps required to ensure that the Project complies with the applicable laws and regulations of the Borrower and with the SPS.	Being complied with
Schedule 5, para. 10	The Borrower shall ensure that the core labor standards and the Borrower's applicable laws and regulations are complied with during Project implementation. The Borrower shall include specific provisions in the bidding documents and contracts financed by ADB under the Project requiring that the contractors, among other things: (a) comply with the Borrower's applicable labor law and regulations and incorporate applicable workplace occupational safety norms; (b) do not use child labor; (c) do not discriminate workers in respect of employment and occupation; (d) do not use forced labor; (e) allow freedom of association and effectively recognize the right to collective bargaining; and (f) disseminate, or engage appropriate service providers to disseminate, information on the risks of sexually transmitted diseases, including HIV/AIDS, to the employees of contractors engaged under the Project and to members of the local communities surrounding the Project area, particularly women. The Borrower shall strictly monitor compliance with the requirements set forth above and provide ADB with regular reports.	Being complied with
Schedule 5, para. 11	The Borrower shall ensure that the principles of gender equality aimed at increasing Project benefits and impact on women in the Project area are followed during the implementation of the Project. These include (a) equal pay to men and women for work of equal value; (b) enabling working conditions for women workers, and (c) taking necessary actions to encourage women living in the Project area to participate in the design and implementation of Project activities.	Being complied with
Schedule 5, para. 12	The Borrower shall make available, or cause DHI and CDCL to make available, necessary budgetary and human resources to fully implement the EMP.	Being complied with
Schedule 5, para. 13	The Borrower shall ensure, or cause DHI and CDCL to ensure, that all bidding documents and contracts for Works contain provisions that require contractors to: (a) comply with the measures relevant to the contractor set forth in the EIA and the EMP (to the extent they concern impacts or affected people during	a) Being complied with

	construction), and any corrective or preventative actions set forth in a Safeguards Monitoring Report; (b) make available a budget for all such environmental and social measures; (c) provide the Borrower with written notice of any unanticipated environmental risks or impacts that arise during construction, implementation or operation of the Project that was not considered in the EIA and the EMP; (d) adequately record the condition of roads, agricultural land and other infrastructure prior to starting to transport materials and construction; and (e) reinstate pathways, other local infrastructure, and agricultural land to at least their pre-project condition upon the completion of construction.	b) Being complied with c) Being complied with d) Being complied with e) to comply and end of works (2021 Q1)
Schedule 5, para. 14	The Borrower shall do the following: (a) submit bi-annual Safeguards Monitoring Reports to ADB and disclose relevant information from such reports to affected persons promptly upon submission; (b) if any unanticipated environmental and/or social risks and impacts arise during construction, implementation or operation of the Project that was not considered in the EIA and the EMP, promptly inform ADB of the occurrence of such risks or impacts, with detailed description of the event and proposed corrective action plan; (c) no later than six months of the Effective Date, engage qualified and experienced external experts or qualified NGO[s] under a selection process and terms of reference acceptable to ADB, to verify information produced through the Project monitoring process, and facilitate the carrying out of any verification activities by such external experts; and (d) report any actual or potential breach of compliance with the measures and requirements set forth in the EMP promptly after becoming aware of the breach.	a)To be complied with b) To be complied with c) to comply with independent environmental monitoring expert d) To be complied with
Schedule 5, para. 16	The Borrower through DHI will provide all counterpart funds, land and facilities required for timely and effective implementation of the Project, including without limitation, any funds required to (a) to meet any shortfall between cost and revenues for the operation and maintenance of the facilities developed under the Project, (b) to mitigate any unforeseen environmental and social impacts, and (c) to meet additional costs arising from design changes, price escalation in construction costs and/or unforeseen circumstances. The Borrower will make the resources thus required available on an annual basis for each fiscal year. In addition to the foregoing, the Borrower shall ensure that DHI and CDCL have sufficient funds to satisfy their liabilities arising from any Works and/or Consulting Services contract.	Being complied with
Schedule 5, para. 18	The Borrower, DHI and CDCL shall ensure that the anti-corruption provisions acceptable to ADB are included in all bidding documents and contracts, including provisions specifying the right of ADB to audit and examine the records and accounts of the executing and implementing agencies and all contractors, suppliers, consultants, and other service providers as they relate to the Project.	Complied with for CW-01. To comply with CW02, 03, 04 & 05
Schedule 5, para. 19	The Borrower shall develop and implement a program for regular and periodic maintenance of the facilities to be financed by the Project in accordance with international best practices acceptable to ADB, and make adequate resources available, through budgetary allocations or otherwise, for this purpose.	To be complied with one year before operating of every infrastructure
Grant Agreement		
Section 3.01	The Recipient shall make the proceeds of the Grant available to CDCL under the Subsidiary Financing Agreement upon terms and conditions satisfactory to ADB and shall ensure the smooth implementation of the Project and that such proceeds are applied to the financing of expenditures on the Project in accordance with the provisions of this Grant Agreement and the Project Agreements.	Being complied with
Section 4.02	The Recipient shall enable ADB's representatives to inspect the Project, the Goods and Works, and any relevant records and documents.	Being complied with

Appendix 12: Photographs album

Appendix 12.1: Visitors and Particular Occasions

MoEA minister and officials visit

Phuentsholing Thrompon visit

Disaster team site visit with Thrompon

BBS interview with PM of PIU

Monthly coordination meeting PIC, PIU and CW01

Officials from Helvetas site visit

Staff mass cleaning campaign

PCR and PTDP meeting

Director, Department of forest visit

Engineers day celebration at AFCONS mess hall

Prime Minister's site visit along with officials

Appendix 12.2: Work progress

- **Site laboratory Test**

Initial and final setting time for cement

Silt content test

Coarse aggregate gradation test

Fine aggregate gradation test

MDD test at site lab

Impact value test for coarse aggregate

Flakiness and elongation index test

Concrete cube testing

- **Temporary Flood Protection**

Mould preparation for concrete cube blocks

Concreting the blocks

Curing the blocks at site

Placing of concreted blocks for river protection

Two spurs infront of Existing big bund

Concrete blocks for flood protection

Concrete blocks at scourage area

Concrete blocks washed away during a heavy rain fall

Spurs at end termination at PART-8

Channel at hill side near NHDCL colony

Hume pipe above the Staff quarter, and below the NHDCL colony

- **Protection Wall Works**

Guide Wall

Guide wall: Top flanges

Guide wall: formwork preparation and concreting

Guide wall: concreting and formwork removal

Diaphragm wall

Excavations for D-wall panel

Sounding check: excavations depth

Bentonite viscosity test

Bentonite density test

Bentonite pH value test

Stop end installation

Rebar cage checking and lowering

PVC Weep holes installation

Rebar cage installation

Slump test before concreting the panel

Concreting the D-Wall panel

Concreting the D-Wall panel

Concrete finish level check

Cast in Situ Wall

Formwork preparation for cast-in situ wall

Concreting for cast-in situ

Compaction of concrete by vibrator for cast-in situ

Concreted panel

Concreted panel of cast in situ wall

- **Earth filling works**

Dumping for earth filling work

Spreading for earth filling work

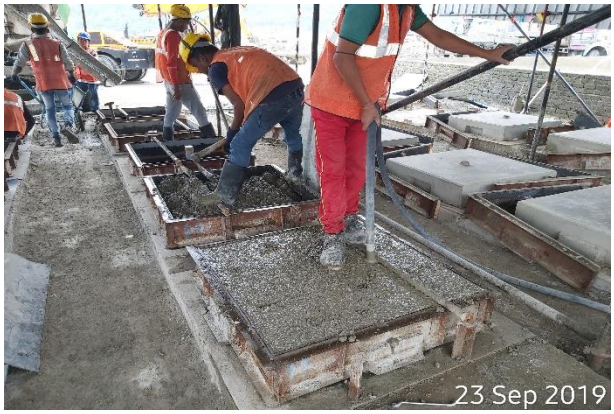
Compacting the earth fill

OMC test after compaction

- **Production of Precast Grass Paver Blocks**

Mould preparation

Slump test



Concrete pouring into mould

Vibrator for compaction

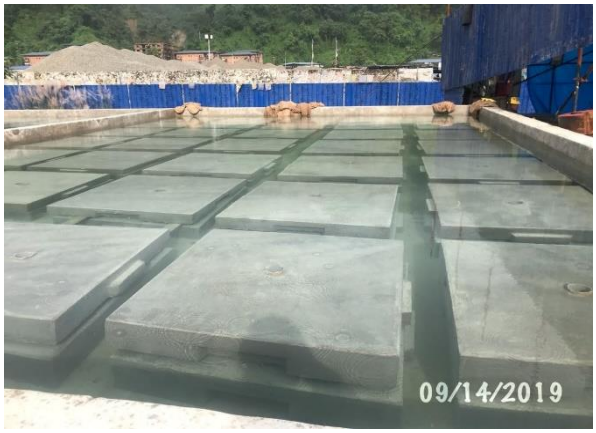
Precast blocks finishing works

Precast blocks finishing works

Mould removal for precast block

Drying of blocks in shade

28 days of curing



Curing of blocks in curing pond

Stacking after 28 days of curing

Appendix 12.3: Health Safety and Environment

- **Health and safety**

Labourers and staffs from PTDP preparing to evacuate due to heavy rainfall

CDCL safety team during a visit

ADB safety workshop for HSE team

Fogging for Dengue prevention

Fire safety training

Earth quake mock drill and information sessions

Safety award day

Sub contractors labour camp

Dengue information sessions for all the staffs

Hazard identification and risk assessment workshop

Accident incident and investigation workshop

- **Environment**

Heavy rainfall at site

Trucks parked near the project boundary

Surface water testing sample collection

People bathing nearby project vicinity

Waste burning at NHDCL colony nearby project area

Bentonite covered at site with plastic sheet

Data collection for Terrestrial survey


Air monitoring at project area

Noise monitoring devices used at site


Surface water testing sample collection


Monthly terrestrial survey at project area

Ground contamination control